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JANUARY 1935

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AMERICAN FORESTS

OID BUTLER, Editor

L. M. CROMELIN and ERLE KAUFFMAN, Assistant Editors

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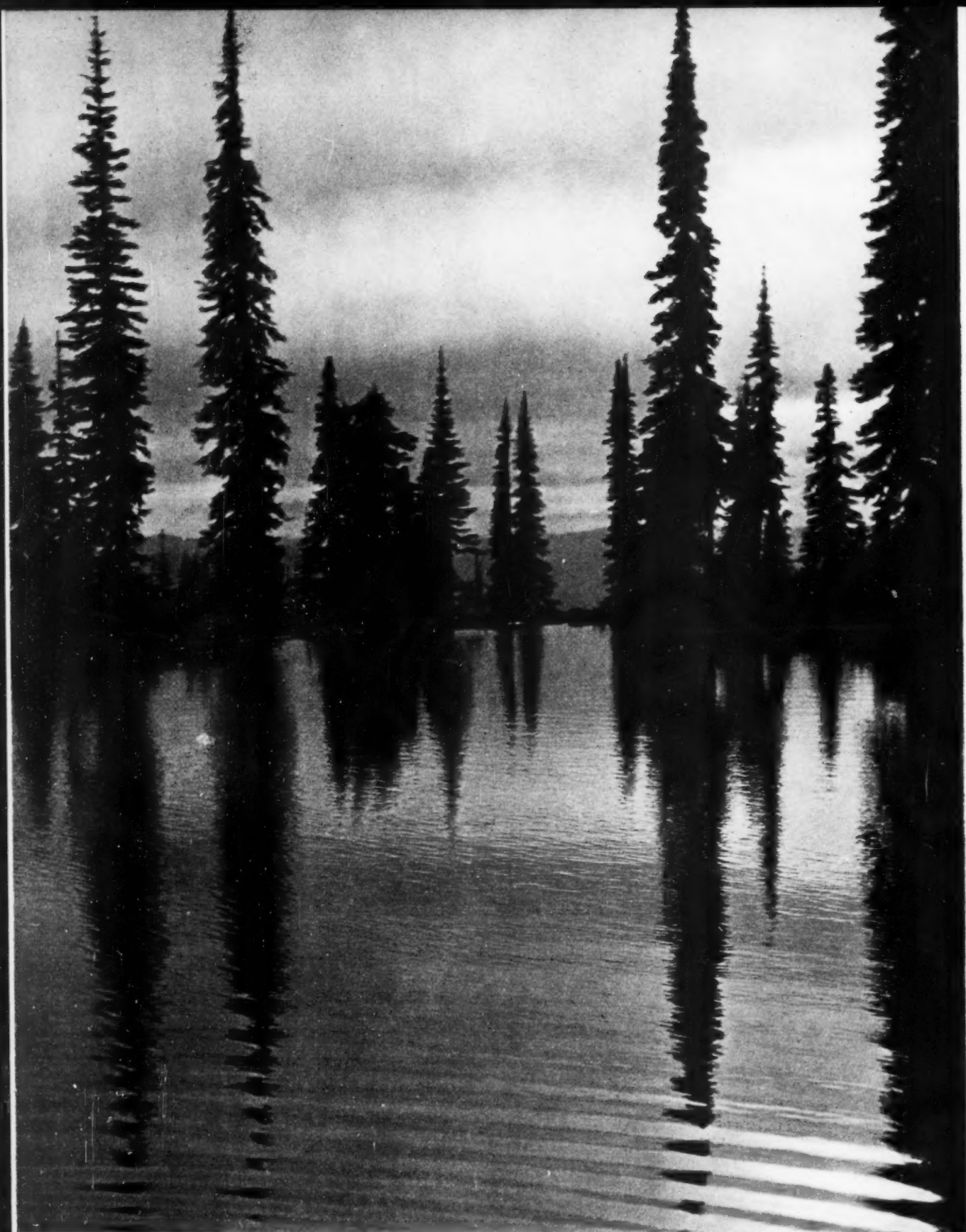
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Member A. B. C.

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Photograph by Lloyd R. Koenig

Alpine Firs

***** and memories, that dusk distills,
Like lengthening shadows on an highland lake
Cupped in a hollow of the silent hills. —*

JOHN PHELPS

Montana State Award 1933—National Competition Conducted
The American Forestry Association
for
Beautiful Photographs of Trees in America

AMERICAN FORESTS

Vol. 41

JANUARY, 1935

No. 1

THE CHALLENGE OF FOREST LAND

America's Present Adversity Accentuates Need to Make It Contribute Affirmatively to the Permanent Support of the Nation's Population

By F. A. SILCOX

Chief, United States Forest Service

DURING the past thirty years many opportunities have been made, and others seized, to advance forestry and forest conservation in the United States. Today a new opportunity is here. It is in some ways the biggest and the most glorious of those which have yet confronted the nation. To all, this new opportunity beckons. It offers a bold, compelling challenge. It presents a problem vital to relief, to rehabilitation and to reconstruction; to present and to future social and economic standards.

It is the forest land—an empire which constitutes almost one-third the area of the continental United States—which offers this new opportunity. And paradoxically, perhaps, it is the nation's present adversity which accentuates this opportunity; an adversity which has envisioned thirty cent wheat and six cent corn, a twenty-five per cent turnover in farms because of mortgage or tax delinquencies, 50,000,000 acres of land the agricultural crops from which can no longer be sold abroad, dwindling foreign markets for our manufactured goods, frozen credits and buying power at home. It is an adversity which looks upon more than 10,000,000 people who have been out of industrial and agricultural work, 8,000,000 still jobless during the present winter.

The problem which challenges is that of making forest lands affirmatively contribute, with security and stability, to the permanent support of their fair share of the nation's population. And this, in my opinion, is the fundamental purpose of America's public conservation policies.

To accomplish it, one third of the land area must be kept productive, with forest resources managed as crops, on sustained yield bases, rather than as mines. This is a long time job. It is one which calls for rebuilding much of the forest empire; for improving and developing still more of it. But these things are possible. And once accomplished, forests can then support many more people than they now do; forest capital will be secure rather than insecure; forest industries stable instead of unstable; permanence rather than enforced migrations may characterize the lives of families; whole communities can then depend upon jobs made possible by a continuous supply of forest products.

In this rebuilding and improving lies conservation's greatest opportunity. By means of it forest properties will become added sources for labor and supplies; the doing of it will aid in the immediate national effort for relief; social and economic reconstruction and rehabilitation will

be forwarded. From this huge forest work reservoir, old jobs may be replaced by new. But the old concept—exploitation of family and community as a means to produce and utilize products of the land—must definitely go into the discard. The new ideal—utilization of forest land and its resources for the permanent support of families and communities—must take its place.

In casting up the opportunities which the forests afford, it is well, perhaps, to look to past performances. For they are indicative of future possibilities.

During normal times forest work gave full time employment to approximately 1,500,000 people. Sale and distribution of forest products helped keep another 500,000 or more in jobs. Two and a half million farmers secured sorely needed supplemental cash incomes, plus wood and building material, from forest land. The pre-depression capital value of the forests and forest industries has been estimated at \$10,000,000,000; gross annual income from forest-industry products averaged close to \$2,000,000,000 prior to 1929.

And although they include only some 162,000,000 of the country's 614,000,000 acres of forest land, the Federally-owned National Forests furnished more than 26,000,000 man-made days of work during a twelve months' period in 1933-34. The immediate purpose of this work was, it is true, to relieve distress. The projects were, however, so planned and executed that they have greatly increased the potentialities of the properties to contribute to the support of the nation's population. Included were, by way of example, diminution of forest destruction by insects and diseases; reduction of excessive fire risks by removal of hazardous conditions, construction of forest highways, roads, motor-ways, trails, lookout houses, telephone lines and other facilities; improvement of timber stands; reforestation; reduction or control of soil erosion; creation of more favorable conditions for wildlife.

This work is essentially an investment. Planned to help protect, develop and perpetuate forest resources, it has made Federal forest properties more valuable. Progress toward a coordinated development of forest resources and facilities, present and future, has been made; the work has been in the public interest.

This work was on National Forests, living within or adjacent to which are more than 750,000 people who are dependent, in whole or in part, upon these forests or their resources. And recent exploratory surveys indicate that this number will exceed 900,000 individuals within the

next few years. This dependency is in part upon the flexible but permanently sound management of timber, range, water, game and recreational resources of these relatively undeveloped public properties. In part it is on industries which are dependent, in turn, on National Forest raw materials; and partly it is on day labor in projects designed to protect, administer, improve and develop these national assets.

But in its surveys the Forest Service did not stop with a mere count of the people who are now and may in the future be dependent upon the National Forests. Its data separates family from non-family laborers; those living inside the Forests are tallied separately from those outside; various forms and degrees of dependency are quantitatively and qualitatively defined. It has, moreover, explored possibilities for worthwhile constructive work. Applying normal standards of performance to them, there is indicated a future need for 20,000,000 man-days of work a year. Even after 1940, when the peak of planned new construction may be reached, its data indicates a need for more than 11,000,000 man-days of work over an indefinite period. So the National Forests as they exist today constitute a huge work reservoir; they offer an opportunity for worthwhile jobs in thirty-six states, Alaska and Puerto Rico.

What about forest lands in private ownership? They make up four-fifths of the country's commercial forest lands. And since 1620 the lumber industry has been financed and operated on the basis of rapid liquidation; has supplied, from those lands, forest products by utilizing what nature, in its bounty, has provided. Its policy has been to remove timber rapidly, with no sense of responsibility for ghost towns in the North, South, East, or West; without regard to scattered, depressed agriculture and undermined economic and social structures. In this process one after another of the great timber regions have been tapped, then drained, like a succession of huge reservoirs. The last of these reservoirs is now the virgin forests of the far West. They still contain enough timber to last for many years, but the cream has been skimmed; centers of population with the bulk of the demand for forest products are in the East and the middle West; higher transportation costs have come; prices of lumber and forest products have advanced as logging operations have pushed farther and farther into lower-grade and more inaccessible forest stands.

In this process a great deal of damage has been done. More than 74,000,000 acres have been so "mined" that they are now in devastated or poorly stocked condition; more than 380,000,000 acres—ninety-five per cent of all privately owned forest land—have been managed without semblance of adequate measures to provide either for sustained forest production or sustained forest yield. So, while labor and capital have increased production from agricultural lands, they have drained forest lands in private ownership. And this draining has proceeded to a point where rebuilding and improving is essential to national welfare.

What has happened in recent years in three western states may be mentioned as an example. In 1915 the pine region of Montana supported twenty-five sawmills with a daily capacity of 1,745,000 feet, board measure. In 1931 only four of these mills, with a daily capacity of 525,000 feet, board measure, were operating. In Idaho, in 1915, fifty-four mills with a daily capacity of 4,375,000 feet were operating in the pine region; in 1931 this number had been reduced to ten mills with a daily capacity of 1,865,000 feet. In Washington, in 1915, there were thirty-eight mills operating in the pine region, with a combined

daily capacity of 1,921,000 feet, but in 1931 only sixteen of them, with a daily capacity of 1,098,000 were still in operation. Thus, in sixteen short years, eighty-seven mills, with a combined daily capacity of 4,553,000 feet, went out of business. These conditions serve to emphasize the fact that in the far West today, forest history is being repeated. The old cut-out-and-get-out system is still in operation. Devastation, depopulated towns, depressed social structures, are still here as a result of private ownership and management of forest lands.

Under a National Recovery Act code, the lumber industry has committed itself "to conserve forest resources and bring about the sustained production thereof." Industry representatives, in conference with those from the Department of Agriculture, and state and other agencies, have established principles to serve as a basis for conservation measures to be required in woods operations. Those principles have received formal approval by the President. Regional rules of minimum woods practice have been accepted by the National Industrial Recovery Agency. They became effective on June 1, 1934. The purpose of the woods practice rules is to leave forest lands producing. This is a minimum requirement. It is progress over past performances, but the fundamental purpose of Article X of the lumber code goes farther. It aims to assure for each economic unit a continuous supply of forest products; a continuous operation, stability rather than instability of employment; permanence rather than impermanence for communities dependent upon forests and forest products. This is known as sustained yield forest management.

It is essential that it be extended to commercial forests now in private ownership. Recognizing this fact, the Lumber Code permits production control and establishes the principle and practice of cost protection. These two measures help provide the basis for sustained yield. In addition, Federal aid in fire protection is extended to private timberland owners under the Clarke-McNary Act of June 7, 1934; cooperation in research is extended by the Forest Service; the going value of authorized Emergency Conservation Work on private lands is conservatively estimated to have exceeded \$83,000,000—of which more than \$63,000,000 was spent for fire prevention for the period April 5, 1933, to and including June 30, 1934.

What does the task of private forest land rebuilding amount to in terms of man-days of non-competitive work? No one will really know until after an inventory and land-use plan are drawn. And that plan must be in full sympathy with the social viewpoint. I believe the need will be for not less than 100,000,000 man-days of work each year, for many years to come. In venturing this figure I have in mind the fact that inventory and investigation show the need for 20,000,000 man-days of work on the publicly owned National Forests, that four-fifths of the country's forest land is in private ownership, and that private forest land has for decades been exploited and abused.

There are those who say there is no need for land-use planning. The old way, they aver, is the best. With those ways snags were struck, but overcome. Therefore, they argue, why not continue with those old ways. History is bound to repeat itself; good times must come again. With these people and that argument I have no patience. They forget, it seems to me, that grandfather's flintlock musket is no longer useful; that the electric range has replaced fireplace and crane; that hard surfaced roads and automobiles make the ox-cart a liability rather than an asset. They would, in theory, deny all progress in knowledge as well as in material things. To me this is not the voice of



In any program to make the forest lands of the country permanently support their fair share of the nation's population, the problem of privately owned land looms large because it constitutes four-fifths of the total, is the most highly productive and most easily lumbered. Selective logging designed to keep forest lands continuously productive and to maintain stability of employment is a feature of the Lumber Code now applicable to all private operations of the lumber industry. The photograph shows selective logging by tractor in heavy timber near Quincy, California.

progress; it is not the voice of America. It is known now, I believe, that the nation can no longer weather a major depression by striking out, with flintlock and ox-cart, for free farms and free virgin forests. For they no longer exist. The care-free, joyous, grabbing days of a youthful nation are definitely gone.

I venture the assertion that the people of the country have learned from experiences of the past; that they must intelligently apply the results of their knowledge if they are to progress in the future; that they are now willing and eager to make such applications; that knowledge gained by experience is being applied; orderly progress is being made.

In any planned program to make our forest lands capable of supporting their fair share of the nation's population, the problem of privately owned land looms up. For of all our forest and potential forest land, that now in private ownership is the most important. It constitutes the larger proportion of the total. It is the bulk of the most highly productive, the most accessible, the most easily logged forest land in the country. It is, too, that which has suffered most. Of the 83,000,000 acres now devastated or poorly stocked, nine-tenths is privately owned; an appreciable part of the remainder reached this condition before coming into public ownership. And ninety-eight per cent of the forest area burned annually during the last few years has been in private ownership.

This ownership is, moreover, unstable. About 25,000,000 acres of forest land, largely industrial, is now in long-time tax delinquency in the Lake States, in the South, and on the Pacific Coast. With the urge for rapid liquidation most of it has passed out of production. To avoid carrying charges it has passed from the tax rolls. This process has been hastened by the depression. Decades are required to grow forest crops. Continuity of policy requires long-time, national planning. Stability of land ownership is, therefore, a prerequisite to adequate forest land management.

Recognizing this fact, the Forest Service recommended in 1933 an acquisition program involving both Federal and state participation. It placed at 224,000,000 acres the area desirable for acquisition by public agencies within a suggested period of twenty years. This in addition to areas now so owned and managed. One purpose was to provide necessary stabilization. With this program, federal policy of land acquisition for National Forests has been speeded up. During the last fiscal year 4,206,560 acres of privately owned forest land were acquired or placed under contract of sale to the government as against 672,425 acres the previous year and a maximum of 547,925 in any one earlier year. Accelerated progress is being continued. The net results of this immediate program will be the addition to the National Forests, largely in the East, South and Lake States regions, of more than 7,000,000 acres of forest, future forest, and watershed protection lands. They will provide proportionately enlarged opportunities for employment, reconstruction and rehabilitation; a sound basis for reestablishing permanent local communities based on stable forest industries. The need for continuation of this program at an adequate rate is obvious. And since public ownership by no means

implies Federal ownership, acquisition of state forests should be undertaken by the states. For there is real need for adequate systems of state forests.

That a major shift in forest land ownership is necessary, seems evident. Such a shift does not mean that private ownership of forest lands need be wiped out, but it does mean that it is essential to the economic and social welfare of the United States that the present ownership ratio—eighty per cent private and twenty per cent public for commercial forest lands, seventy-five per cent private and twenty-five per cent public for all forest lands—be changed.

Such a shift is now in contemplation in the area in the basin above Muscle Shoals, for example. There, the forest and potential forest land which is not valuable for agricultural or for urban uses totals some 13,000,000 acres. At the present time approximately 1,500,000 acres are in public and 11,000,000 in private ownership. But plans contemplate that ultimately only 3,000,000 acres will remain in private ownership, with 1,000,000 in state and 9,000,000 in Federal control. A net shift, in other words, of 8,500,000 acres of forest lands from private to public ownership and control. Data collected in Tennessee for the National Resources Board indicates a similar trend. That State's present forest area is approximately 13,318,000 acres. It seems probable that its future forest area may be slightly over 10,150,000 acres. Of this, 476,700 acres are now in public—Federal, state, county and municipal—ownership. The balance, some 9,675,000 acres, or about ninety-five per cent, is in private ownership. But—and here is the significant thing—the ownership recommended as desirable for the future reduces private forests from 9,675,000 acres to 1,117,000, and increases public forests—including State, County and Federal—from 476,700 to more than 9,000,000 acres!

One significance of this trend may be grasped from an exploratory survey just finished by the Forest Service. This survey indicates the need for 1,378,000 man-hours of constructive, non-competitive work a year for the next five years on National Forests and Purchase Units in Tennessee. Translated, this means 100 eight-hour days, or 122 six-hour days of work for 1,722 men each year for five years. The present area of those National Forests and Purchase Units is approximately 1,330,000 acres. If the ratio of work to acreage is applied to the 9,000,000 acres recommended for ultimate Government ownership in Tennessee, there would be indicated 100 eight-hour days of non-competitive work for 13,676 men each year.

Although this matter of private forest land and of public acquisition is important, it is by no means the only factor in the major problem. Another has to do with forestry legislation. Out of the Copeland Report, the Conservation Conferences on the Lumber Code, discussions on the Forest Shelterbelt Project, and many other sources, there has developed a real need for broad, enabling forestry legislation. This need is a vital matter, and one to which recognition of the social viewpoint must be given. The aim, the purpose, the *raison d'être* of such legislation should be so to restore and manage our forest lands that they may affirmatively and permanently support their fair share of the nation's population.





Quail on Nest.

PREDATORS AND THE NORTHERN BOB-WHITE

By PAUL L. ERRINGTON

Photographs by courtesy of the Biological Survey

SINCE the beginning of human thought on wild life populations, it has been universally assumed that if a predator—an animal that preys destructively upon other animals—lives on the same land as its prey, then any reduction in the number of predators would automatically result in an increase in the number of prey.

The farmer who seeks to raise game on his lands, for example, assumes without question that shooting hawks which eat game birds will increase the game bird supply or at least check its decrease. The fish culturist assumes without question that shooting herons which eat trout will increase the number of trout or check the decrease of trout.

The protectionist or the naturalist who protests ruthless or indiscriminate predator control has usually premised his argument on the belief that certain predators do not actually eat certain kinds of game, or, if they do, that their benefits in other ways offset the damage to game. Sometimes the naturalist has flatly challenged whether the desire for more game warrants the sacrifice of predators. Whatever may be the merits of his argument, never so far as I know

Here is a challenge, based upon scientific findings, to those who would make war on predatory birds and animals in the name of game conservation.

It is predicted that the discovery announced in this article will, after it is more thoroughly developed, throw a flood of new light on three vexed questions of wildlife conservation:

1. Does ordinary predator control do the game any good?
2. Does the shooting of surplus do the game any harm?
3. Does it do any good to replant game without also improving food and cover conditions?

Mr. Errington's findings as presented in this article indicate that the final answer to all these questions is "No."

—The Editor.

has he challenged the assumption that there would be more game if there were less predators of the kinds which actually prey upon it.

It now falls to my lot to throw down such a challenge—in one specific instance at least. I have stumbled upon—without very much foresight, I'll admit—what seems to me satisfactory evidence that quail in southern Wisconsin and Iowa are not materially affected by the abundance or scarcity of

predators, except when the quail have over-populated their winter range, at which time they are reduced to a normal population level for that range, regardless of whether predators are abundant or scarce.

I here present the evidence condensed, so the reader can judge for himself what it means. If it means what I think it does, then we need to revise radically some of our ideas of bob-white management in the North.

Continuous field studies from 1929 to 1934, principally on southern Wisconsin observational areas, furnish strong evidence that the carrying capacities of individual covey ranges or territories limit the number of birds that can get through the winter. The simple wintering territories studied

from season to season, show four out of five with winter carrying capacities quite definite for the individual territories.

Winter carrying capacity as used here refers to the maximum number of bob-whites that a given area can support naturally until spring. In other words, carrying capacity denotes the upper limit of survival for a winter population, although it does not assure the survival of the top number. Various emergencies, as brought on by wholesale starvation or excessive shooting or possibly by disease, may reduce populations below normal carrying capacity.

Winter carrying capacity of quail environment may be crudely compared to the capacity of a farm chicken coop. A chicken coop has room for only about so many birds, and if a poultryman has more chickens than his coop can accommodate, obviously he cannot get them all in. Unless the poultryman builds another coop or otherwise disposes of his surplus stock, some chickens will have to stay outside. If the extra chickens leave the premises and find security in some other poultryman's coop which doesn't

show, for instance, survivals for one territory of twenty-three, thirty-two, twenty-nine, and thirty-three birds for four consecutive winters. The lower figure for the first season was due to a starvation emergency late in the winter; the uniformity of the other spring survivals, though, placed the normal carrying capacity at approximately thirty-one birds. For another territory, survival was twenty-one one winter and twenty-two the next; for another area, thirty and thirty-two. One territory wintered seventeen birds for the two out of three seasons it was fully occupied. Another, also occupied two out of three seasons, wintered twelve and thirteen birds respectively.

On the basis of data such as the above figures, it seems that the upper survival limit is almost a fixed property, almost as inherent in the wintering territories as capacity is in a chicken coop. Our hypothetical poultryman could not expect to winter more chickens than he had accommodations for, irrespective of the number with which he might start the season. If he has fewer chickens than the capacity of his coop, he will probably winter nearly the whole flock,



The Wisconsin studies throughout showed that winter predation upon bob-white was largely a question of how many birds were dangerously exposed. The photograph shows deficient bob-white cover in southern Wisconsin during the winter season.

happen to be filled up, it may make little difference to them. In the event of visits by predators, the chickens exposed outside will suffer, not the ones secure in coops. Depredations may continue until all of the chickens outside of coops have been killed or have been driven away; those properly housed, however, will still be reasonably safe.

To be sure, a quail wintering territory has not as sharply defined boundaries as a chicken coop, but the analogy is not far-fetched. A quail covey range or territory has a combination of food resources and escape cover suitable for an approximately constant number of birds. As chicken coops are built in different sizes, so covey territories occur with different carrying capacities.

The carrying capacities of the Wisconsin and Iowa observational areas were first arrived at through analysis of the survival figures recorded from winter to winter. When no more than a certain number of the birds wintering in a given range succeed in getting through under the best of conditions and over a period of years, that approximate number may be accepted as the carrying capacity or the upper limit that the range is able to winter. Our records

so far as predators are concerned. If he has more than he can effectively take care of, either he has to dispose of the surplus or reconcile himself to losing it.

Similarly, in the case of quail territories, it appears to make little difference how many extra birds station themselves in a territory, because a limit of only about so many will get by, this limit varying with the individual territory. During the winter of 1929-30, the quail population of a Wisconsin territory was observed to shrink from twenty-five to eleven. The next season, the covey in the same territory was reduced from thirteen to eleven. The next, twelve survived of a population of twenty. This example is possibly too clear-cut to be typical, but it may serve to illustrate the influence of carrying capacity upon the fate of surplus birds. Whole coveys, too, may be eliminated when they can find no suitable place in which to stay and are thus compelled to occupy poor or even uninhabitable environment.

Bob-whites are gregarious up to the point of associating in coveys, but beyond that point, they are reluctant to live under crowded conditions. Intolerance of crowding is usually shown simply by coveys avoiding the territories of

each other, though accounts exist of fighting between whole coveys, presumably over territories. Intolerance of crowding is also betrayed by the reactions of quail to the introduced ring-necked pheasant. When pheasants have concentrated in otherwise acceptable quail coverts, the quail have avoided these as they would coverts over-populated with their own species.

A picture of the way populations behave in the wild may be gained by considering the known history of the principal Wisconsin area (five square miles east of Prairie du Sac) for the five years that it has been under close observation. The winter of 1928-29 was one of deep and persistent snows in south-central Wisconsin. The studies which were initiated the following summer, therefore, had to deal with a quail population drastically reduced by starvation. It was found that the population entering the winter of 1929-30 was one quail to twenty-six acres—low for the normal carrying capacity of the land. The birds occupied only coverts of superior quality and suffered from enemies at the loss rate of five and eight-tenths per cent per ninety days. The next winter, the population of a bird to twelve and five-tenths acres was still easily accommodated by the superior coverts and the loss from predators was at about the same rate—five and six-tenths per cent. The 1931-32 population of a bird to eight acres not only filled up the superior environment but some that was inferior to the extent of being actually uninhabitable. As



Poor and uninhabitable environment—illustrated by this grazed woodlot in Illinois—the author asserts, is a more dominant factor in reducing the population of quail than is the presence of predators.

a consequence, the birds lost at the rate of twelve and five-tenths per cent, the preponderance of losses being suffered by those coveys living in the last occupied and poorest coverts. In 1932-33 a winter population of one quail to seven and nine-tenths acres lost at a similar rate of twelve and eight-tenths per cent. For the 1933-34 population of a bird to seven and four-tenths acres, and over-crowding made still worse by the eviction of some coveys from their territories by C.W.A. roadside debrushing activities, the loss rate shot up to twenty-four and four-tenths per cent.

Three typical stages are then evident in the natural repopulation of an area after the quail have been decimated



In contrast to conditions shown above is this ungrazed piece of woodland in the same locality. Note the good coverts supplied by low growing bushes and vegetation where the quail can hold their own and increase in spite of preying enemies.

from some cause.

First, the recovering population fills up the best environment and is subject to a low winter loss rate from predators as long as it occupies only the best environment, assuming, of course, that the population is fit. This loss rate for secure winter populations, as reliably measured to date, ranges from nothing to six per cent per ninety days. Even at six per cent it may be considered immaterial, for this is not so much in excess of the normal rate of mortality which would be expected from age and accident if there were no predators.

In the second stage of population recovery, inferior types of environment are occupied by the overflow which bears the brunt of the pressure from enemies. There tends to be some degree of crowding in superior environment, but this takes place to a surprisingly small extent. Coveys occupying better grades of environment remain comparatively secure except in instances where carrying capacity is exceeded.

The final stage is characterized by coveys which cannot, or do not, crowd into occupied territories but which either wander from one inferior covert to another or station themselves in an uninhabitable location. Either way, the covey numbers shrink steadily until the approach of annihilation. The last few birds, however, usually attach themselves to coveys more favorably situated, often with the result of increasing the losses of the coveys joined.

Wandering coveys may now and then discover habitable territories outside of their accepted ranges, although their chances are rendered slight by crowded conditions also likely to prevail on neighboring lands. Commonly, we may be fairly safe in assuming that wandering or badly located coveys, or excess birds generally, are doomed to lose out before spring.

A specific example may demonstrate how this happens in nature, by referring to the record of an uninhabitable territory which has been under observation since the winter of 1929-30. The territory was possessed of an excellent and attractive food supply. Its weakness lay in deficiency of cover. Early in the winter of 1929-30, a covey of eight birds stayed in the territory for a time but moved into safer quarters. The winter of 1930-31, the territory was unoccupied. The season of 1931-32, a covey of twenty-six—after gradually moving nearly a mile and a half from the place where first noticed on October 30—established itself permanently and lost all but two birds by March 23. Failure marked the attempt of a covey of twelve the winter of 1932-33. For 1933-34, the notes show the reduction of a population of twenty-four to nine between October 31 and March 3. By March 22, the remnant of the covey had left or had died.

The data from this territory illustrate the apparent lack of connection between the severity of depredations upon winter bob-whites and the kinds and number of predators. The first winter, when the eight birds moved out, the territory was practically unoccupied by predators dangerous to strong adult quail, save for one or two occasionally visiting grey foxes. Next season, the fox population was again light and transient, but a pair of nesting great horned owls had moved in. The terrific mortality of the 1931-32 season was traced almost exclusively to the pair of horned owls, although a Cooper's hawk and a heavy population of grey foxes probably contributed.

Relief from horned owl pressure (through departure or death of the owls) did not make the territory any more habitable for 1932-33, as the continued quail losses show. Likewise, the losses continued at a hardly diminished rate for 1933-34, when there was again no evidence of horned owls nearby and when the fox population was decidedly lower

than for the two winters preceding. While the "sign" indicated fox depredations, this signifies far more an essentially unchanged and precarious exposure of the quail than any increased quail hunting ability on the part of fewer foxes.

All the way through, the Wisconsin data, and what we have from Iowa, bear out the concept that winter predation upon bob-white (apart from the preying of enemies upon the starving, the crippled, or birds weak from other causes) was very largely a matter of how many bob-whites were dangerously exposed. The number dangerously exposed was not the same as the number resident, for environment of high carrying capacity was observed to winter securely quail populations at least as heavy as a bird to four acres—a superior stand for north-central states. The birds in excess of carrying capacity—high or low—were those which suffered the severest mortality from predators, and these excess birds suffered anyway whether predators were scarce or abundant. Excess or surplus birds were eliminated in some way or another, and it did not seem to make much difference what happened to them. Horned owls and Cooper's hawks, especially the former, did the actual killing of the vast majority of the Iowa and Wisconsin birds for which the cause of predator mortality was ascertained, but decreased numbers of these two predators, down to absence of both, afforded no evident relief to vulnerable bob-white populations.

I do not intend any statement of mine to mean that under no circumstances could predators have any influence upon quail populations. I make no pretense of knowing all there is to know about the matter. Natural relationships are too complex to permit of many hard and fast generalities. But the data from five years' work make it apparent, nevertheless, that the influence which differences in predator numbers may have had on the survival of quail populations studied has been so slight as to be unmeasurable. Certainly the importance of predator control in the management of the northern bob-white has been grossly over-estimated, while a deplorable lack of attention has been given the manipulation of food, cover, and covey ranges. Indeed, the public tendency has been to emphasize the negligible predator factor to the virtual exclusion of management measures that really count.

Let no one labor under the idea that predators—including the truly formidable Cooper's hawks—can take well-situated and vigorous adult bob-whites at will. There is little helplessness about a prime winter bob-white having access to suitable escape cover. Bob-whites have lived for a long time with Cooper's hawks, horned owls, and other dangers which have always been in their racial background. Danger-tried bob-whites know pretty well when to fly or when to hide or when to do something else in case of attacks. They don't need too much sympathy to thrive; they need mainly a chance to live according to their natural adaptations.

Man, himself, by means of his intelligence and modern hunting equipment, is about the only predator of which I know efficient enough to reduce bob-white populations much below the normal winter carrying capacity of the land. Quail can be over-shot, but even over-shooting is not so detrimental where populations have the protection of strong environment.

In the management of the bob-white, the fact should be stressed that an exposed bob-white surplus is not to be bolstered up by the usual public campaigning against predatory species, a great deal of which is unjustifiable on any reasonable grounds. Surpluses are vulnerable because they are surpluses. If more birds exist than their environment can accommodate, something will befall the extra ones. An area does not necessarily need a large population of quail to be over-populated. In the less (*Continuing on page 46*)

PRIORITIES IN FOREST RECREATION

"There Are Two Worlds
in Which People May
Live Today"

By ROBERT MARSHALL



The National Park Service

The highest category of forest recreation is the enjoyment of the primitive outdoors—typified here in the back country of the Yosemite National Park—because it stimulates in the most fundamental way feelings which other forms of recreation do not stir.

RECREATION means many different things, depending on the person who is thinking about it. The non-committal dictionary proclaims that recreation is "any exercise or occupation that diverts."

Forest recreation may thus consist, to some people, in climbing rarely scaled mountain tops to glory in the wilderness panorama and to become saturated in the feeling of the primitive. To others, it will take such different aspects as driving at seventy-five miles an hour along well banked highways; striving to see how many hours one can stand on his or her feet, clutching a partner of the opposite sex, in the stirring competition of the dance marathon; playing golf; blowing soap-bubbles; throwing pool balls in inebriate joy at the moon; and setting fire to the forest to hear the gigantic roar of pine trees bursting into flame.

These are only a few examples from an almost infinite variety of diversions, inspiring, innocuous, and downright profane, which might give immense pleasure to different types of people in the woods. The question is, should all these forms of potential forest recreation be considered of equal importance and be given equal precedence in the forest?

I would answer yes, if the whole country were wooded and there was plenty of room for all of these recreationists to ply their pastimes without ruining the enjoyment of any of the others. One hundred years ago, when the population of the country was still only a few million people and the forest area was nearly double what it is today, such an arrangement would have been readily possible. However, the whole country is not wooded today. In fact, only about 420 million out of 1903 million acres are covered with what even a reasonably tolerant person might call forest. There definitely is not room for the mountain climbers, and the automobilists, and the dance marathoners and the golfers, and the soap-bubble blowers, and the pool ball shyers, and the fire-bugs to enjoy themselves without ruining the enjoyment of some of the others.

Whenever the uses which men want to make of anything

in the world exceed the supply, one of three practices must be established. The contending factions may engage in warfare for the right to use the disputed thing until one side or the other is killed off. It would be romantic indeed to imagine the automobilists and the hikers taking pot shots at each other in the forest until one side or the other would emerge victorious. Probably this is not feasible. The second method, is to let every person grab what he can. This appears to be the chaotic method by which most of the uses of what is precious in this country have been acquired. There are many who advocate seriously for forest recreation—"Let nature take its course." There are some who believe that the use of limited things should be planned in a way which will make possible the preservation of unique values. Specifically, in the use of the forests for recreation, priorities must be established so that the most precious values will not be wiped out by secondary or even trivial uses which could be enjoyed in other environments.

In establishing these priorities, it seems that those types of recreation which are unique to the forest and which stir the emotions of forest users most deeply should be given precedence. Those which are aided by the forest but which can be enjoyed without it, and those which give pleasure but not the most fundamental sort of happiness, should be given secondary consideration. Those which might be enjoyed as well somewhere else could properly be accommodated if there is room for them without interfering seriously with either of the first two priorities. Finally those which tend to destroy the forest, regardless of whether they are unique to it, must be barred under our present shortage of woodland available for recreation.

This is simply the common sense which is applied to many other forms of recreation. Ocean beaches, which are limited in extent, have been zoned in many regions so that those who enjoy them in a fairly natural condition will not constantly be made unhappy by hideous pop stands, noisy souvenir peddlars, or odoriferous canning factories. I have a friend who painted a picture, and he

is indignant because no art gallery will hang it. He thinks it is the greatest picture which has ever been painted. The museum authorities do not think so, and they will not hang it. If there were a hundred times the amount of wall space in art galleries that there is today, poor as this picture may be, perhaps it would be hung. But museum space is limited, so the authorities give priority to what seems to them most distinctively art, and the shabby efforts of ham and egg painters have to be eliminated.

Thus far I have only generalized regarding the establishment of priorities among the different categories of forest recreation. Now, I shall mention specifically what seem to me to be the major categories, and I shall rank them in order from lowest to highest.

The Incendiary Category.—Many otherwise estimable people take a perverted delight in destruction. In the forest this takes the form of incendiarism. In the early days of the country there was so much forest compared with the number of users that firebugs did little harm. Today the opposite is true, and the incendiary enjoyment of the forest is completely outlawed.

The Coney Island Category. This includes the patronage of dance halls, pop stands, ferris wheels, roller coasters, and similar stimulants of the superficial which might be enjoyed as well at the county fair as in the forest. Nevertheless, in certain already developed portions of the forest, where there are no unusual scenic values, I can see no objection to them.

The Athletic Category. This would include the more orderly and athletic pastimes such as golf, tennis, baseball, and, I suppose, horseshoe pitching and croquet. To many people, these take on an extra enjoyment in the

setting of the forest. They seem to be legitimate uses of woods, provided they are not pursued in regions where they would clash with the higher priorities. Where they do, they should be barred. Thus, the Park Service has wisely resisted the pressure for golf links in National Parks, where the artificiality of the greens and the fairways would interfere seriously with the primitive grandeur for which the parks were set aside.

The Motor Category. The enjoyment of the forest from motor vehicles constitutes a still higher category, because people driving in cars are more concerned with the forest environment than are those indulging in athletics. It is true that on a highway one misses all of the most subtle features of the forest, but there still are many of the gross features which may be enjoyed. Therefore, it is laudable to construct hundreds of thousands of miles of roads through the forests in order that the huge number of people who cannot or who do not want to get away from mechanization may yet enjoy what values they can of the woods. Such roads should not, however, be located in the relatively small area of the primitive which still remains.

The Summer Home Category. Living in dwellings set in the woods ranks above driving along highways as a forest use, because people who live for days at a time in one section of the forest get to enjoy far more subtle values than those who travel through it at high speed. It is important, however, in planning forest homes that they are not so crowded or so carelessly erected as to damage the beauty of the adjacent woods.

The Primitive Category. The highest category of forest recreation is the enjoyment of the primitive outdoors. This may take the form of walking, horseback riding, camping, fishing, hunting, mountain climbing, or just peace-

ful contemplation. There are two aspects of the primitive in the forest. One involves primitive methods of travel, and areas which are free from mechanized routes of transportation may be termed wilderness areas. The other involves primitive vegetative conditions, and areas in which the virgin forest conditions have not been materially altered by man or his introduced abomination, fire, may be termed primeval areas. The enjoyment of wilderness and primeval areas stimulates in the deepest and most fun-



Hanapar Studio

The critical problem in forest recreation today is to save the rapidly disappearing primitive and wilderness areas of the country which more and more are being invaded by the automobile through the construction of roads. The photograph shows an automobile camp ground in Rainier National Park.

damental way senses which the other categories of forest recreation do not stimulate at all or at best influence in a far less intensive manner.

This past Fourth of July I drove across the famous Logan Pass in Glacier National Park. I looked from the summit at the deep valley which until recently had dropped away for miles in native wildness. Now, however, it was scarred as far as one could see by the boulevard which climbed from the westward on easy gradients. For miles also stretched the

dead and ugly surface of cement in place of the fresh grass and flowers and lichen-covered rocks which had lain there undisturbed since before the time of man. Surely this road had done disastrous offense to the sense of sight even though much beauty yet remained potentially. I say potentially, because in dropping down the grade we passed some twenty-seven different cars, every one of which was closed. The passengers inside could not possibly see more than the lower portion of those very mountains for the facile view of which this scenery-destroying highway had been built.

But sight is only one of the senses which is stimulated by the primitive. The sounds of the forest are entirely obliterated by the roar of the motor. The smell of pine needles and flowers and herbs and freshly turned dirt and all the other delicate odors of the forest are drowned in the stench of gasoline. The feeling of wind blowing in the face and of soft ground under foot are all lost. There is also the psychological sense of immensity which one gets in the primitive forest, the glorious freedom from time-dwarfing and space-dwarfing machinery, which is destroyed as soon as human developments invade the wilderness.

The forest one knows from an auto road is emphatically not the forest of the primitive. It is only a second-rate replica, just as the phonographic records of Kreisler are replicas of his real playing. It is fine for those who cannot hear the real artist to be able to get this second hand impression of him, so long as the original is not destroyed in the process. Similarly, it is fine to make it possible for the majority of people who will never desire or be able to know the primitive to get a second hand impression of it, so long as the original, the vital, the real forests are not all destroyed. Unfortunately, the original, the



United States Forest Service

Living in dwellings built to tone in with the natural beauty and atmosphere of the woods rates higher as a forest use than driving along highways, because people who live for days at a time in the forest enjoy far more subtle values than those who travel through it at high speed.

vital, the real forests are growing precariously scarce in our effort to supply the many with what can be only faint suggestions of their true nature.

The critical problem in forest recreation today is not to lay out attractive golf links among the trees, nor to construct well graded highways which scar the scenery a little less than usual, nor to beautify the roadsides, important as such considerations may be. The critical problem is to save the rapidly disappearing primitive. Every year sees several of our few remaining forest wilderness areas invaded by roads. Where twenty-five years ago there were more than one hundred tracts of roadless forest with at least one million acres in them, today there remain but thirty with even quarter of a million acres. Similarly, the tracts of virgin timber have been so depleted that today there are certain very beautiful forest types in which not a single primeval area of more than a few hundred acres remains.

All of this is so unnecessary. It is perfectly possible to add hundreds of thousands of additional miles to the three and one-half million miles of existing roads in the United States without invading the primitive. All it requires is a little balancing of values and a little planning. To a person driving along a road, there is no advantage in knowing that this road has just invaded a wilderness area. To a person who delights in travel through a wilderness, the construction of such a road spells ruination. By all means let us construct many roads in beautiful places for the majority to whom the love of the primitive is inexplicable. But at the same time let us not ruin the far deeper happiness of the minority to whom the primitive is of surpassing glory.

An excellent example of how (Continuing on page 30)

TURN THE FLOODS INTO FORESTS!

CONSERVATION OF FLOOD WATERS IN THE PRAIRIE STATES IS ESSENTIAL TO THE FULL SUCCESS OF THE SHELTERBELT PROJECT OF LAND RECONSTRUCTION

By GEORGE HEBARD MAXWELL

THE greatest miracle of Nature is the motion picture films in our own minds, the photographs of things we have seen fifty or sixty years ago that are indelibly engraven on our memories.

Ever since the controversy started as to the proposed "Shelter Belts" on a straight north and south line from North Dakota to Texas some mysterious machinery in my mind has been unrolling picture after picture of things that I have seen that would make controversy impossible if those pictures could be simultaneously shown to every one who believes in the principles of tree culture that suggested the shelterbelt.

All the pictures, which I can instantly recall at any moment, were indisputable evidence of one controlling factor:—When planting trees, always plant where the tree will have an adequate supply of water, which must necessarily increase with the age of the tree as the years pass.

If the water-supply is uncertain at any given place where tree planting is contemplated, make it certain, or plant somewhere else. To prove that principle by some of those miraculous mental films, go first to San Simon in the valley of that name in Arizona. There are a few scraggly, stunted trees at San Simon. Not many, and to look at them is depressing. To multiply them would

create a worse impression on visitors than if there were no trees at all in the town.

Now drive east across the wash and up on the other side of the valley high enough to get the wide sweep of view that will enable you to see a large group of beautiful trees far in the distance to the south-east at the head of the valley in New Mexico. On a hot summer day it makes you feel cool to look at them across the simmering desert plain. You wonder why they are there, when all around them is so dry and bare of foliage.

The answer is that "Old Man Chenoweth," the early pioneer of that country, who gave his name to the "Chenoweth Ranch," hunted until he found a place where there was an adequate permanent water supply before he located the headquarters of his ranch. Then he planted a grove of trees around the buildings for much the same purpose that it is now proposed to create the Shelter Belt in a continuous straight line from Canada to West Texas.

The Chenoweth grove of trees is one of the landmarks of that country. Some ten or more years ago I drove in there to make an inquiry about the road to San Simon. It is a typical early Arizona ranch, with its round adobe corral. I saw a woman out in the open photographing some children. I asked her how long she had lived there.



This is the Hopper Dam across a draw near Ness City, Kansas, which conserves the flood waters, takes the place of a bridge that would cost \$3,500, subirrigates thirty acres of alfalfa and garden for three ranch families, waters 800 cattle and makes of the creek an all-year round small stream.

She replied "All my life. I was born in a little house just below here." "Why, there must have been plenty of Indians around here when you were a little girl!" was my next comment. "If you thought there were not you would make a big mistake," was her answer. I had noted among the trees a gigantic pear tree. I asked her how old it was. She said "About forty years."

It is a great thing for any man to do in his lifetime if he proves something that it is worth other men's while to know. "Old Man Chenoweth" left us the indisputable proof that the place to plant trees in a semi desert country is where there is a permanent water supply,—always enough

and never too much,—a supply that will never run short as the trees grow older. The trees he planted are his enduring monument. They further proved that the supply of water need not be a surface supply. He located midway between the Chiricahua mountains, from which living streams flow the year around, and the big cienega lower down the valley, and the roots of his trees went down to the permanent level of the underground water.

Another filmed picture that comes back to my mind

when I think of the shelterbelt was of a huge fig tree growing near a wayside spring on the road from Sonora, in Tuolumne County, by way of "Jintown" to Fresno, in the San Joaquin Valley of California. It was many years ago, before there were any automobiles. There was just



Before "damming the draw" the dry creek was bare of timber, and only had water in flood times or after heavy rains. By setting out cottonwood cuttings timber came in all along the creek.

a little trickling stream coming from the spring, to fill a horse-trough by the side of the road; but there was water enough to keep the trough filled and furnish all the water that the immense fig tree drew up from the ground and transpired into the atmosphere as it grew to be so large. If there had been no little spring there would have been no big fig tree; and if the spring were to dry up, as many millions have dried up because of deforestation, the big fig tree would die too.



A by-product of "damming the draws"—a large herd of cattle waters at the small storage reservoir above the dam—subirrigation providing better pastures.

My companion on that drive from Jintown to Fresno was C. W. Clarke, of the old-time firm of Cox and Clarke, among the largest land-owners in the San Joaquin valley in California. He was one of the very earliest pioneers in that country. As we finally got far enough down out of the Sierra Nevada Mountains to see off across the valley, he turned to me and said: "Maxwell, there has been a great change in this

country since I first came into it." I asked: "In what way?" He replied: "In the way the water-table has risen. When I first came into this country the water was from seventy-five to one hundred feet deep and there was no water nearer to the surface anywhere in the valley. Now the trees have their feet in the water and their orchards will die unless the ranchers put a drainage ditch through the valley or drain it down in some way." My next question was: "What has raised the water-table?" "Why, just the water running in the irrigation canals," Clarke answered.

That answer stated the most important factor in the whole problem of water conservation and use that must control all our plans for water in the future. The law of gravity is constantly drawing water to a lower level and if there is a canal or ditch running on a ridge, the water will automatically work its way out from the ditch and saturate the soil below with water, thereby establishing the zone of permanent underground water supply that forms the best possible water-supply for groves of trees planted for a shelter-belt.

The State of North Dakota and the State of South Dakota and practically all of western Kansas and Nebraska could be sub-irrigated from canals that would spread the waters underground from surface canals. The laws of gravity, percolation, saturation and capillary attraction would provide the system of distribution.

Take North Dakota as an illustration and assume the Fort Peck dam, now under construction, were completed. A canal could be taken out from the Fort Peck reservoir running north-east from the dam to the Canadian International Boundary. Thence east a main-line canal could be constructed from the northwest corner of North Dakota to the northeast corner of that State. Note the elevations along the international boundary line: Straight north from Glasgow, Montana, or from the Fort Peck dam the elevation above the level of the sea is 3,000 feet; straight north from the junction of the Missouri river and the Yellowstone, at the northwest corner of North Dakota, it is 2,000 feet; straight north from Williston or Minot it is 2,000 feet; straight north from Devil's Lake it is something over 1,500 feet; half way between that point and the northeast corner of North Dakota it is 1,500 feet, from which it drops to 1,000 feet with very little fall from that point to the Red River of the North.

One main floodwater canal starting at the Canadian border north of Devil's Lake and running almost due south on the crest of the ridge between the Missouri and the James rivers could fill fish ponds and subirrigated zones for timber on every farm in North and South Dakota lying east of the Missouri river. A similar canal taken out of the Fort Peck reservoir on the south side of the Missouri river could be made to furnish water for the farms of North and South Dakota and western Nebraska for a continuous tree shelterbelt from Miles City, Montana, to North Platte, Nebraska, and on south through western Kansas and Oklahoma to the Texas Panhandle at Amarillo.

Any one who will take the trouble to line out with a heavy black line the 3,000 and 2,000 and 1,500 foot contours in Montana, North Dakota and South Dakota will be amazed to observe the complete practicability of this plan for spreading flood waters and soaking them underground instead of having them run to waste in floods in the three States named and in western Kansas and Nebraska.

The National Reclamation Association published a large

map about twenty-five years ago showing the route proposed for such an Equalization Flood Water Canal starting on the 3,000 foot contour at Billings, Montana, and following that contour to the Niobrara river in Nebraska. Then it followed the course of the Niobrara to the 2,000 foot level between Holdrege and Hastings, Nebraska, running thence almost due south to Abilene, Texas. At Abilene it reached the watershed of the Colorado river of Texas and any surplus water joined the flow of that river.

No matter how valuable the waters of the Missouri river may be for navigation on the Missouri, it is inevitable that their value to save North and South Dakota, Nebraska and Kansas from such calamities of drouth and dust storms as 1934 brought upon them, and furnish absolute insurance against ultimate ruin by dessication, will lead eventually to the building of the system of canals suggested.

It is not necessary, however, that those canals should be built now to provide water for the tree belt proposed. Water for all the shelterbelts required can be provided by damming the draws throughout the country in the shelterbelt zone—building just such dams across the draws as was built by J. C. Hopper at Ness City, Kansas, twenty-five or thirty years ago, which have been such a striking success and which are illustrated herewith. The advantage of this checkdam system is that all the work is "pick and shovel work" and could be done by an enlisted corps of unemployed workers under a plan for their organization similar to the Civilian Conservation Corps, supplemented by the work of teams and scrapers that could be done by the farmers themselves. The farmers should be paid for that work by the federal government.

Mr. Hopper himself has sent the following memorandum as to the beneficial uses of the project: "This dam takes the place of a \$3,500 bridge. An overflow is provided. This sub-irrigates and supports thirty acres of alfalfa and garden for the three families on the ranch. And it causes the dry creek to be an all-year-round small stream. The dry creek was bare of timber and only had water in flood times or after a heavy rain. By setting out cottonwood cuttings we have timber all along the creek and lots of fish for the boys in Ness City, only three miles distance. We picnic in the groves. All that is from this one dam, which was built and donated to the county on the J. C. Hopper Ranch. The garden from the dam will support a family of ten, and keep six cows and two teams in alfalfa, and furnish enough fish for the family. We water about 800 head of cattle at this dam. It is in the middle of a 4,000 acre pasture."

In another letter Mr. Hopper says: "The Rocky Mountain watershed, together with the local rains, afford ample water to grow the best of crops in western Nebraska, Kansas and Oklahoma, as well as the Dakotas and Texas, were it possible to conserve the rain and use it when needed. It seems to me that my slogan: '*Dam the draws, plant trees and summer fallow*' will contribute much toward the goal, as well as take care of the flood waters that hurriedly pass through this semi-desert to the great water-courses, taxing their banks to overflowing. In traveling through western Kansas one cannot help notice the great benefits of groves, the equalizing effect they produce on hot winds, and the moisture retained among them, even in the hottest and driest time. Wonderful results can be had from damming the multitudes of draws that traverse this country, drawing on these pools for irrigating small tracts, gardens and small acreages of alfalfa."





EDITORIAL

The Issue of the Grazing Act

A CAREFUL study of the Taylor public domain grazing law by the 74th Congress will afford our national legislators this session what will probably be their greatest opportunity for public service through the promotion of the conservation of important natural resources. Passed in a frenzy of haste, along with a multitude of other important measures by Congressmen impatient to complete the session and return to their constituents, the measure contains numerous ambiguities and contradictory provisions. It is no secret that the two executive departments most immediately interested in the measure were in total disagreement in their interpretation of certain provisions believed to be vital. Probably most important of all was the question of whether or not a grazing permit issued under the provisions of this law would give the permittee the equivalent of a property right, one Department fearing that it might be so construed, and the other contending that it could not be so construed, and so assuring the President.

While it does not appear that any statement has emanated from either Department favorable to the granting of a property right in grazing permits, preferences, or privileges, upon the other hand, it has been generally contended by the present users of the Government range, whether National Forest or Public Domain, that their grazing permits, privileges, and preferences actually do, and as a right ought to, constitute a property interest in the Government land itself. Amendments were written into the bill by Western Senators with this in view. These members do not hesitate to contend that the law as enacted actually has the desired effect.

This raises an issue which should be squarely met by Congress and definitely and finally settled. The ownership and undisputed control of approximately 180 million acres of land now belonging to all the people of the nation is actually at issue. If Congress intended or intends that the present users of these lands are to be given a property interest which in any way hampers or restricts the authority of the Government to protect and develop the property and to so distribute its use as may appear from time to time to be fair and just to the citizenship of each generation, that fact should be made known and the extent of such property rights granted to the Western stockmen, or such restrictions upon the administrative power of the Federal Government should be plainly stated and clearly defined.

The very physical magnitude of the task of apportioning the right among numerous divergent and clamorous claim-

ants to the use of public lands for grazing and other purposes clearly indicates the danger of attempting a hasty distribution of rights, privileges, or preferences upon anything more than a temporary basis. Certainly the Secretary of the Interior should not be expected to authorize the issuance of a single permit or the determination of a single preference until the law is amended so that there is general agreement both as to its actual meaning and intent. If it is the desire of Congress and the President in any way to tie the hands of the Secretary and to give the present users a property grant, the law should make this clear beyond peradventure. If, upon the other hand, it is the desire of Congress and the President to give the Secretary full authority to handle the property as appears from time to time in the best interest of the public, with due consideration to local needs and dependencies, but retaining title in the Federal Government and control in the executive Department, this also should be made clear. Until this point is definitely settled one way or the other, it is obvious that the issuance of permits or the determination of preferences is hazardous in the extreme.

The Taylor Grazing Bill might easily have been made a conservation measure comparable to the Act of June 4, 1897, providing for the administration of the National Forests. It is particularly disappointing that it contains no constructive provisions for the protection and development of wild life resources in connection with the administration of the public lands. It is silent upon this point except to provide that: "nothing in the Act shall restrict the right to hunt and fish in a grazing district."

This is passively negative rather than constructive. It should be strengthened by amendments enabling the Department, either directly or cooperatively, to redeem its responsibility for development of all the resources of the region under its administration. The first step in this direction might well be to provide that the officials of the Public Domain Grazing Service designated by the Secretary of the Interior shall always, when practicable, aid in the enforcement of the laws of the States with regard to stock, and for the protection of fish and game. The activities of the Forest Service in the enforcement of the game laws of the western States was founded upon a similar measure contained in the Agricultural Department appropriation Act of May 23, 1908. Surely there could be no objection to similar powers being granted to officers of the Interior Department in administering grazing on the Public Domain.

THE FOREST CORPS

By
JOHN URBANEK

Camp F-10, Trout Creek, Montana, Civilian Conservation Corps

*I sing the hopes of Youth that almost died;
I sing of eager hands that were denied
Their right to hold the tools of human toil;
I sing a song of fertile, ready soil
That lay in weedy waste for want of seed;
I sing of one who saw the double need
And, in the fullness of his ken, decreed
That Youth should learn its strength—that barren lands
Should leap to verdant life beneath its hands.*

1.

Not that our arms were weak or we afraid,
But only that the way was not for us;
What strength of heart or arm can overcome
A bleak barrage of utter nothingness?



The hills we might have climbed, the rising roads
We might have trekked to reach our hearts' desires
Were marked, "No thoroughfare: by order of
The Blunders Men have Made."

And so we stayed
In idleness, and puzzled hopelessly
To find a meaning in this life of ours.

We paced the grinding pavements till our feet
Grew heavy as the weight within our breasts.
And if we met a fellow in our quest
We cheered each other with a bluff, "Hello,
"How goes it?"

He would answer readily,
"Oh, there'll be something doing soon—I guess."
And then we'd talk of other, brighter things
To keep a grip on that one last support
That's called morale. Sometimes on sleepless nights
It slipped away to leave us helpless; then
"How long? How long?" we asked ourselves again.
But found no answer in the pressing dark.

And some of us had drifted from our homes
In search of Work to Do; but finding none,
We took to eating, in our hungry state,
The crippling lotus of indifference.
Till, careless of all decency, we roamed
The highways of the land—a vagrant crew
By nothing held, with nothing much to do.



And any "rattler" pulling out of Chi,
Seattle, Frisco, Memphis, or Des Moines
Was barnacled with young humanity.
By jungle fires we sat and learned the creed
Of hoboland—that there was due to us
A living, and by hook or crook or plea
We'd get that living from society.
Ay, we were ripe for bloody anarchy
And ready to renege against all faiths.
But, being young, a single honest Chance
Might swing us back into the common stream.
Yet who was there to give us that one Chance?
Had we not asked it at a thousand doors?

2.

Then, while our elders sat in solemn council,
Oppressed by fears that held a world in awe,
A man rose up among them and he spoke
Grave words of courage to their faltering souls
That made them say, "This man must be our chief."
So, as he led them from the council tent,
His eyes beheld us as we loitered there.
"What do these able men in idleness?"
(Lord, how we thrilled to hear that spoken "men"!)
They answered him, "Oh, chief, there is no place
For them within our ranks, and so they wait."
"No place you say! In this my great crusade

*No single laggard must be left behind.
Come! Give the lads their due accoutrements
And put an end to this their indolence!"*

From San Diego, to the tip of Maine,
Three hundred thousand youths stood up to march.
With feet that faltered strangely in their beat,
We took perhaps a dozen feeble steps
Before a Bully in a uniform
Bawled fiercely, "Lift those lazy dawgs! One! Two!
Hell, where's your spunk, you — —, you!"
Then something blazed beneath our denim shirts
That made us hate that Bully up ahead
—That made us curse the fellow at our side
—That put the strength of fury in our stride.
We slogged along with teeth set hard and fast
With heads and hearts bent forward to the march.
We slogged along—and then, a miracle!
A rhythmic strength imbued our tramping feet
And set them pounding to a steady beat.
And at the sound our eyes grew slowly wide
Till, lo, the clumsy stumbler at our side
Became a comrade. Lo, the Bully too
Became a leader to our widened view.
And we were ready for the task at hand.

3.

Since Adam delved and cut the first brown gash
Into the rugged bosom of our earth,





This law of laws has spurred the human race:
What man removes from earth for his own use
—That, soon or late, he must again replace.
And who presumes upon fertility,
Himself, or through his sons, shall live to see
The stern enforcement of that law descend
In dearth and famine on the heads of men.

Yes, man must plant and man must cultivate.
But we who went with mattock, ax, and pick
To groom the forests of a nation—we
Knew little of eternal truths as such.
Enough that we were managed by the touch
Of men who did. What truths about us lurked,
Ourselves could only guess at as we worked.

We worked. The Appalachians felt our stroke;
Our shovels pierced the Adirondack soil;
The Mississippi felt our guiding hand;
The towering Rockies watched us at our toil.
We worked. But, God! how hard we found the learning
Of how to work—whose arms had never strained
To any task so trying and tremendous
As this—How fierce our muscles pained!
How hot the sun at noon beat down upon us!
How dusty were the roads we worked upon!
How sharp and tearing were the forest thickets!
How weary were our limbs when day was done!

No boyish romp was this, but manly effort.
(How tough and calloused grew our knotted fists!)
With pick and bar, with heavy swinging mattocks
We stove the ribs of massive mountain piles.
Through many a mile of brush we fought our way
To deal the parasite his fatal spray;
And seedling trees were planted far and near.
Our axes swung, our saws sang loud to clear
The way for guardian trails that gave egress
To vigilantes of the wilderness.
We worked in danger too, for mark the fate
Of more than one who flung his ardent life
Into the raging holocaust that flared
Across the timberlands of Oregon;
While toppling tree, and flashing dynamite
Were always there to take what lives they could.

We pitted nascent strength against the force
Of fire and flood and drought; all elements
That menaced at the life of these our woods
—And in the fight we found new hardihood.

4.

O comrade! you along the trails with me:
Remember how, when springtime winds were blowing,

We pitched our tents beside the Coeur d'Alenes?
 Remember all those fullsome days of sunshine,
 And all those summer nights of rousing song?
 Remember all that freedom, all that vastness,
 And, best of all, the work that made us strong?

(Remember, buddies, how we rode by night
 The swaying tender of the Limited?
 With all the daring arrogance of youth,
 We stole the power of that iron steed
 To take us to our City of Romance
 —Spokane! Your light was bright, your music gay—
 Remember how the fireman cursed and swore
 To find us "Woodticks" in his bin of coal
 And vowed there were more riders on the blind
 Than in the whole damned string of cars behind,
 Till we were forced to cool his anger down
 By helping fire the engine into town?)

Remember? —

Ah, who has seen the mists of morning clearing
 Away before the force of wind and sun,
 That man has seen the stirring same transition
 That swept upon us when our work was done.
 We stood erect in all that fragrant cleanness
 Which flows across the mountains of the West
 Until the poisoned mists of hopeless brooding
 That for so long had held our souls oppressed
 Were blown away, and we could see again
 The vistas we had sought so long in vain.

5.

Remember? Yes, those memories now hold
 More heads aloft than you would ever guess.
 The hope that turns us once again towards stress
 And effort is the hope that grandly flared
 And leaped renascent into breasts clean bared
 Before the God of hills and woods and streams.
 What heart can ever fail that has its dreams
 To take it out beyond the cities straits
 Into a temple where its comfort waits?
 Or who can ever doubt himself again
 Who knows that he has held his own with Men
 In tests of high endurance, strength and skill;
 Who carries as a bright remembrance still
 The picture of a Fact his hands have made
 —A road, a bridge, a planted forest glade?

*I sing the hopes of Youth regenerate.
 I sing of Youth that walks erect and straight
 And, smiling, faces what it feared before.
 I sing—It taught us how to sing—the Corps!*





At Conway, New Hampshire, the monarch of New England elms rises in majestic splendor, one hundred and twenty-five feet high.

VERY Anakim among elms, the largest in all New England, this great American elm, *Ulmus Americana*, dominates the wide, placid intervalle between the Swift and Saco Rivers in Conway, New Hampsh're. It towers more than 125 feet above the grounds of the pretty white farmhouse of Carroll Bryant on the road to Passaconaway Intervale and its boughs with a spread of equal distance shelter both house and lawn.

Its circumference at the height of the average man is nearly twenty-eight feet and its contents in terms of four-foot wood is estimated at twenty-eight cords. Its great size, however, seems to have nothing to do with its age for there are older elms in New England which do not approach it in stature; for instance, the famous Lafayette Elm in Kennebunk, Maine, and the even more famous Washington Elm at Cambridge, Massachusetts, both of which were probably good-sized trees when this one was set out by the bubbling spring back of Deacon Hill's log cabin in 1770.

For the story goes that when the good deacon selected the site for his cabin in the clearing between the two rivers, he chose it on account of its proximity to the little natural fountain which he had already discovered. And that when he had finished building the cabin and brought his wife there to live, she had suggested setting out a tree by the spring in order to have a shady spot in which to set her tubs and buckets. The dutiful deacon therefore went into the forest and brought home over his shoulder the little elm which he proceeded to plant where the escaping waters of the

THE ANAKIM OF NEW ENGLAND ELMS

By

MARY CARPENTER KELLEY



spring could nourish it and where it should provide a grateful shelter for the daily filling of their crude wooden pails.

The elm grew like Jack's beanstalk and by the time the deacon had become prosperous enough to put up a frame house, it had practically swallowed the spring and was monopolizing the water supply. So he built the house some distance away, dug a well, and let the elm continue to absorb the spring which was by now quite out of sight under its spreading roots.

Today there is no sign of the spring except that if one pushes his hand into the ground between the roots next to the trunk, the water immediately oozes up, showing that somewhere down among the meshes of that great mass of roots the old spring still bubbles.

The intervalle at Conway, just south of the White Mountains, is part of a region which in years past was noted for its great trees, old growth pines and oaks and maples. It is a country which still has its covered bridges, its sap-orchards and its cider-mills, and where the men still hunt coons and line bees. But it is a changing country; the tourist comes each year in greater numbers and the beautiful old trees each year are found in smaller numbers.

The giant elm is only a few miles north of the intervalle of the Bearcamp Waters so beloved by the poet Whittier and not far from the spot which he made immortal in "The Wood Giant," the great pine which he speaks of as the "Anakim of pines, our wildest wish exceeding":

"O dawns and sunsets, lend to him
Your beauty and your wonder!
Blithe sparrow, sing your summer song
His solemn shadow under!
And let the eagle and the crow
Find shelter in his branches,
When winds shake down his winter snow
In silver avalanches."

Whittier must also have known of this giant elm, and of it he might have sung as truly as of the giant pine.

The Chimes of Lost Valley

By ALFRED G. CLAYTON

HAD it not been for old man Warner, the ranger may have gone through life without knowing that Lost Valley existed. There were legends, to be sure, but one does not pay much attention to legends in a country steeped in them. And without seeing Lost Valley the little cabin that nestled among its trees may have remained undiscovered—and the chimes may have gone unheard.

Chimes they were when you know the whole story, but to the flesh and blood that was the ranger it was the unmistakable ringing of a horse bell. At first he was puzzled rather than intrigued; but after he had been in the valley a spell, it was easy to lay it all to overwrought nerves and imagination.

Old man Warner, who owned half the cattle and sheep in the county, had no idea himself that the little valley nestled under the pinnacles of the high Wyoming country. His interest was in livestock. It had been one of those summers when it seemed as though it couldn't rain—and didn't. Naturally anything and everything burned, if not by fire, by the withering rays of the sun.

The old stockman told the ranger in no uncertain terms that his range was considerably short of what was needed to feed his herds and that it was up to the government to furnish more. Didn't he pay to run his whole outfit through the summer? Wasn't he paying his share of taxes? Then why didn't the ranger do something about it? The ranger didn't know of much that he could do. The whole country was dry—burned up. But there was a ridge to the north, leading to the higher peaks, that might be investigated. It appeared to be waste land, partly above timberline, where a goat would find it difficult to exist, but if the old man cared to send his herds up there, the ranger would look it over right away. It had seemed useless to do so before.

So he set out with something bordering upon ill humor. Sheep and cattle could not live on granite boulders, and that was all that he encountered. Twisted trees and tough grasses disappeared after an hour of riding, giving way to a sea of granite, piled up in such a manner as to suggest

the ruins of an ancient city. Hour after hour he fought his way up, doubt giving way to despair.

At twelve thousand feet he was on the verge of turning back when he stumbled unexpectedly upon a granite ledge, and the end of the ridge. He might have whistled, might have uttered a sharp exclamation,—he could not know, but he sat rigid in his saddle, reins uplifted, hat thrown back, and with a look of utter bewilderment in his eyes. Spread below him, almost completely cut off from the rest of the world by a wall of granite, was a valley of beauty such as he had never seen. His mind, when it eluded the spell of the sight, told him that what appeared below was a mirage. Such a spot, in the heart of his own district, could not be. He had ridden the high trails time and again without ever a glimpse of this hidden Eden, this green wilderness in the fastness of the granite peaks. But there it was!

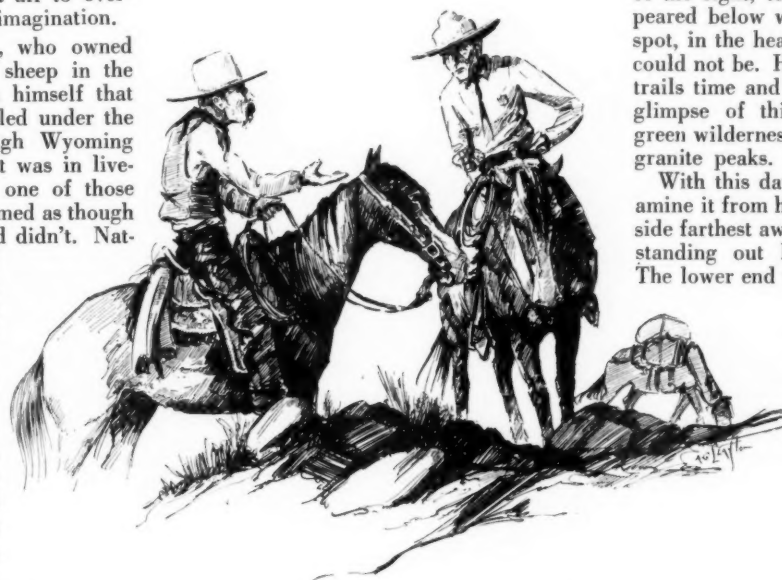
With this dawning he set in to examine it from his lofty perch. On the side farthest away was the main range standing out like cathedral spires. The lower end was open and through

it a small stream coursed. The valley was lined with pines and interspersed with grassy parks, while the upper reaches of both sides branched into heavy stands of spruce, then to timberline, and thence on up to the granite ledge on which he was standing, temporarily drunk with it all.

Then one of the old legends came back to him—a story that he had first

heard when a boy. It had to do with a notorious band of horse thieves and a secret mountain stronghold, a natural corral into which stolen animals were herded to be branded, and from which they were driven, after the brand had healed, to be sold. The leader of the band, he recalled, was said to have eloped with the daughter of an eastern aristocrat, who lived her life as a social outcast in the heart of the little valley. It was a fanciful story replete with fantastical allegations, but to him it had always been analogous to the proverbial "lost mine" stories so common in mountain communities of the West. He mused and let his fancy play at will.

Then he heard the bell! Faintly at first, its musical notes



The old stockman told the Ranger in no uncertain terms that his range was considerably short of what he needed to feed his herds and that it was up to the Government to furnish more.

came out of the stillness to break his musing. It sounded for all the world as though it were borne by a horse moving lazily about—a horse that paused occasionally to nip at a stray bunch of grass or tender shrub.

By force of habit his eyes searched for a movement on the slopes immediately below him where plant life fought with timberline. It did not strike him then that there was something strange about it all. The music of a horse bell had lulled him to sleep many a night; and it was common in his country to hear its pleasant jingle at almost any hour of the day.

But as he searched in vain and the music of the bell continued, it suddenly dawned upon him that something was decidedly off color. Either his imagination was playing queer tricks or human beings were invading his newly discovered world. He quickly discarded the first, for there was no doubt about the ringing of the bell; and he rebelled at the idea of having his picture spoiled by the encroachment of someone other than himself.

He wondered who it could be! There were no prospectors in this region that he knew of; the hunting season was a month or more away; and dudes from the ranches below would be the last to undertake such a venture. The more he thought about it the more he puzzled, the more confused he became. And dusk found him standing there, entranced by the changing colors in the valley below, perplexed by his failure to discover a single sign of human occupancy. He was drawn away only by the need of locating a suitable camp before night set in. And as he turned, the chimes of Lost Valley drifted lazily up to him.

His camp was made by a little stream which trickled from the lower side of a snow bank, and as he prepared supper he planned with nervous eagerness to explore the valley on the morrow. He had for the moment forgotten his quest for better forage to satisfy old man Warner's sheep. The green gem of a valley had claimed him—or perhaps it was the mysterious chimes. He watched the last light of evening merge into the blackness of the night before he crawled into his blankets and slept.

He was awakened by the sun shining in his face. It was not late; the sun rises early on the high ridges. The descent into the valley offered a real problem and he lost no time in getting to it.

At first it looked as though the stream bed at the far end of the valley offered the only point of entry. This meant that he must retrace his trail of the day before, drop down into the low country, and begin at the mouth of the stream. This would require an additional day which he scarcely felt that he could afford. For a moment his heart hung heavy within him. But finally he located a rock slide which he felt he could traverse, and turned his horse into it, with

Jerry, his pack animal, nimbly following.

Shortly he came to a mountain sheep trail and drew a breath of relief. But not for long. Fifty feet ahead it turned onto a narrow ledge. Beneath was a perpendicular granite wall with a fall of one hundred feet, and he lost all interest for the moment in the charm of the valley,—the horse bell. His problem now was to get back with his animals or find another route down.

He almost succeeded. By careful exploration he found

a way to the left, around the projecting ledge. But he had not traveled far when he discovered his pack animal was missing. Turning back the ranger arrived at the narrow ledge just in time to see Jerry fighting for dear life. He was on his back and kicking wildly, apparently having slipped in his attempt to turn around in the loose granite. The ranger jumped for the horse's head, realizing that panic had seized him, and that the only hope lay in getting the pack loose in order that he could scramble back to safety. But Jerry increased his struggle and for a moment horse and ranger were tangled pretty much together.

Suddenly the ranger felt himself sliding to the edge of the wall, and with tremendous effort forced himself free from the tangle of horse and ropes. But poor Jerry was not so fortunate. Amid a cloud of powdered granite and loose boulders, he went over the side, screaming as he fell.

For a while the ranger lay still, cursing himself for a fool, considerably shaken and unable to face the sickening sight which he knew lay at the bottom of the granite wall. Finally, he roused himself and moved quickly to the edge. Jerry lay flat on his back amid a gigantic mass of slide rock. A glance showed that he was suffering and past any hope of recovery. So the ranger took good aim before sending two bullets into his brain. He then turned sadly away, wondering what his next move would be when off to his left came a familiar and haunting sound,—the faint jingle of a horse bell.

He reached the valley by noon, immediately turning his saddle horse loose to graze. The uncanny ringing of the bell was getting under his skin, and he determined to track

it down before he made another move. But search as he would, there was no sign of an animal track other than those of his own horse.

In late afternoon he resaddled and resumed his journey, going straight upstream through heavy timber. But the mystery of the bell remained a secret. There was not the slightest clue. Crossing to the far side of the valley he entered a little park, a grassy glade, and was amazed to find a trail hewed through the forest at its farthest end. He spurred his horse forward with new eagerness. At last



MY FRIEND

*Oh you may have a robin
A bobbin' on your lawn,
A diggin' and a proddin'
At dusk and early dawn,
Or you may have a meadow-lark
A swingin' in a tree
A whistlin' to the growing dark—
I'll take a chickadee.*

*Or you may have an oriole,
A thrush, or sly chewink,
A yellow-throat, or, bless his soul,
A babblin' bobolink;
Or you may have a fussy wren
As busy as can be;
But, lordy! I am happy when
I hear a chickadee.*

*For he is such a cheery cuss
And always stays at home,
He never tries to make a fuss
And never wants to roam.
When other birds to southlands go
I know he'll stay with me
Through all the winter's cold and snow—
My friend—the chickadee.*

*No fickle chap, fair-weather friend
This fellow seems to be,
But staunch and faithful to the end—
God bless you, Chickadee!*

BY JOHN PHELPS

he was getting somewhere. Where there were trails there were horses, and where there were horses there were bound to be horse bells!

But as he drew nearer, his hopes fell. It was evident that the trail had been cut through in years past, so many years, in fact, that young trees were beginning to screen it. But as he studied the cuttings carefully, he was seized with a new interest—an interest that dealt with stolen horses and a notorious band of rustlers. Perhaps after all there was something to the old legend.

There was little doubt but that the trail in its day had been used repeatedly and by a large number of horsemen—or horses. Trees a foot and a half in thickness had been felled and the trail itself was ten feet or more wide. No such effort would have been made by anyone using the valley at long intervals.

As though anticipating a real discovery, the ranger turned up the trail. Adventure was in the wind, and the sense of something old, like buried treasure, flooded his senses. So it was that when the trail led out into a large park that resembled a wild hay ranch, he was not surprised to see an old cabin and corral at its far end!

Although he had an eye for signs of human occupancy, he was certain that it was deserted. The door was open and weeds and grass grew rank up to it. The roof which had originally been covered with earth had grown up with grass.

As he dismounted, the ranger noted that the cabin was much larger than the general run of trapper's or prospector's cabins found throughout the forest. Too, it had been better constructed; more than usual care had been taken in putting it together. His guess was that the hand of a woman—perhaps an aristocratic woman from the East—had had something to do with this. The legend!

The furnishings were scant, however, and such as were found were of the roughest kind. There were two chairs, an old table, and two bunks. On one side of the cabin a bench extended full length while at the opposite end a huge fireplace had been built.

For some reason the ranger's gaze could not leave the table. He was fascinated by frayed remnants of cloth still held secure along the edges by rusty tacks. But the most striking thing he discovered a moment later. Directly above the table and extending the full width of the cabin was a curtain pole, with wire rings still attached to it!

He stood for a moment in sober reflection trying to piece together the threads of the lives that once were lived within these four walls. The curtains and table cloth spoke eloquently of a woman's home-making touch; the manner in which the cabin itself was built pointed to permanency. But who were they? What had brought them to this hidden little world far removed from civilization? What manner of lives did they lead hemmed in by granite walls and lofty peaks? Why did they leave? And what, if any, connection did these things have with the mysterious horse bell?

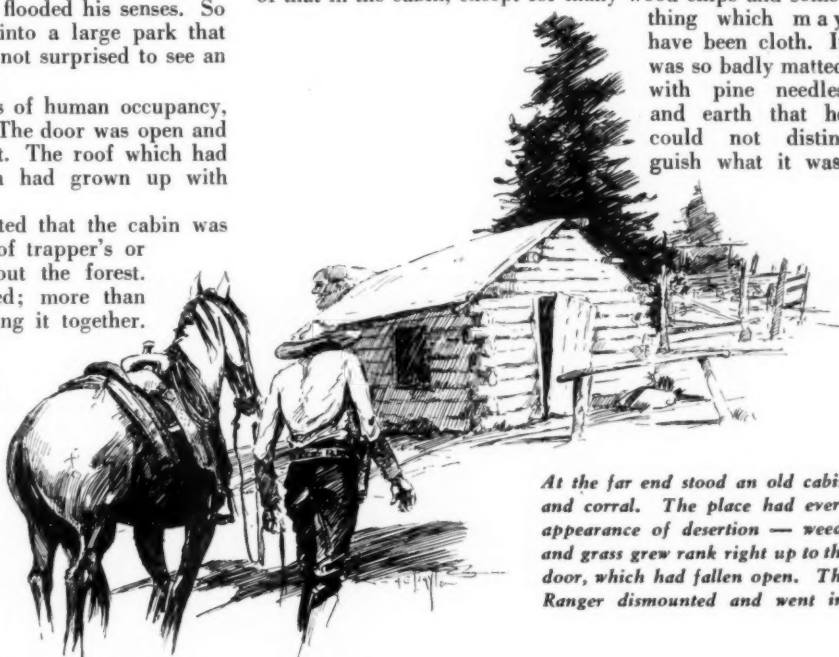
Something kept reminding him of the old legend—of horse thieves, of gun fights, of a woman outcast! Could it possibly be true? Could horse thieves and table cloths go together!

A sudden inspiration brought the corral before his eyes. That might offer something, might give some clue to the mystery that was settling over the cabin. But the corral pre-

sented no less a mystery than the cabin. It was as good as many of those on the ranches in the lowlands, and it was absurd to reason that a prospector or trapper would erect such a corral. But what about a gang of horse thieves? The net was gradually tightening about them!

Returning again to the cabin, the ranger resumed his search. This time he gave more attention to the pile of pack rat's treasures heaped in the middle of the floor. He kicked it about, opening up its inner contents, but found nothing but the usual old broken bits of pine cones, sticks and other forest debris. Perhaps he would have given up the search and the thing would have forever remained a mystery had he not suddenly recalled that close by there should be another pile of treasures—things the pack rats had taken in trade for that which was piled in the cabin. He remembered having seen a sort of cellar in the rear of the cabin, and straight to this he went. The first thing to meet his eyes was that for which he was looking. This pile was a repetition of that in the cabin, except for many wood chips and some-

thing which may have been cloth. It was so badly matted with pine needles and earth that he could not distinguish what it was.



At the far end stood an old cabin and corral. The place had every appearance of desertion—weeds and grass grew rank right up to the door, which had fallen open. The Ranger dismounted and went in.

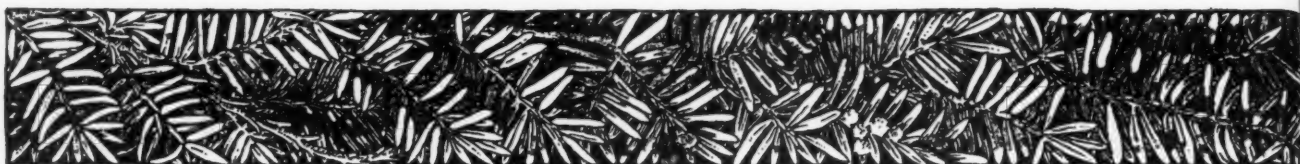
He probed further into the pile and all at once a child's shoe came to light—a shoe that would probably be worn by a child of ten!

Considerably excited now he dug deeper, frenziedly scattering everything over the floor. But there was no reward for his effort. A bit disappointed, he was about to turn away when a small wooden box, so much the color of pine needles that it was difficult to distinguish, caught his eye. He picked it up with shaking fingers.

Although in a fair state of preservation, one side of the box caved in as he handled it, revealing a note book, yellow with age, its few remaining pages matted together. A quick glance told him that while the writing in it was for the most part illegible, words and sentences could still be made out. But what excited him most of all was that the handwriting was distinctly that of a woman. With pounding heart he started for the doorway, and better light.

But he had not taken two steps before he stopped in his tracks, listening intently, if not somewhat fearfully. There could be no mistake about it! Directly above him, and coming nearer and nearer, was the lazy jingling of a bell!

Forgetting for a moment the precious document in his hand, he bolted through the door (*Continuing on page 48*)



FIELD AND FOREST FOR BOYS AND GIRLS

WHAT DO YOU KNOW ABOUT CHRISTMAS TREES AND SNOW?

By JOHN HARVEY FURBAY and LOREN KIDDER



STRANGE, isn't it, that a Christmas Tree during mid-winter will have foliage colored a cool refreshing green, while the leaves on the other trees have dried and fallen off? Well, Mother Nature knew that Christmas came in the middle of winter, when the ground is covered with snow and the trees bare. So she made a class of trees

which would *not* shed their leaves.

They are known as the gymnosperms, meaning naked seed, and they include the pines, spruces, firs, cedars, hemlocks, yews, larches, and some less common trees as the cypress and ginko. They are often called conifers and evergreens. In the temperate region, the most familiar species is the pine tree. Leaves of pine trees are not literally evergreen, as is sometimes supposed. In different pines the leaves remain on the branches different lengths of time. In all species, after a period ranging from two to four years the older leaves fall. There is no definite period when all the leaves are discarded as in the more common or deciduous trees; but they fall a few at a time as new leaves take their place, so we do not notice them at the time they fall.

The pine "needle" is a foliage leaf peculiarly adapted by its structure to withstand adverse weather conditions. The needle has a very hard outer surface which is due to the heavy-walled epidermis and several underlying layers of strengthening cells. These protect the green life-giving fluid, known as chlorophyll.

The temperature changes very slowly in this kind of leaf. The evergreen needles thus conserve their water supply in such a way that they live through conditions

which would kill deciduous leaves. The leaf surface is greatly reduced and its form protected at the expense of abundant chlorophyll exposure. In this way the gymnosperms keep their dark green color throughout the year, making it possible to have a Christmas Tree with fresh green leaves upon its branches even in the dead of winter. And then comes the snow, to decorate these evergreen trees.

Have you thought, as you looked out over the white fields in winter, that the ground was covered with an uninteresting substance, "just snow?" Have you never wondered where it came from? And have you ever examined it closely to see its pattern?

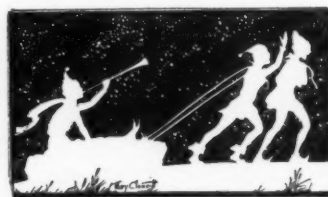
Snow is, of course, a form of water. It is formed by the freezing of tiny drops of water in the clouds. It becomes like crystals, and assumes many shapes. A number of crystals may attach themselves together and fall to the ground as large snow-flakes.

Snow is formed in clouds all over the world. Even over the hottest parts of Africa or other tropics, it forms, but in these places it melts long before it reaches the earth, unless it should fall on a high mountain.

Sometimes snow accumulates in great quantities on mountain tops, and then slides into the valleys, where it becomes so packed that it forms ice, and is called a "glacier."

Snow usually forms in crystals or in granular form. The crystals are beautiful. They are usually formed around a central nucleus, and have six radiating spindles. They look like wheels with six spokes and no rim. There are hollow air-tubes within these crystals, and these look dark when photographed. Some crystals are needle-

shaped, and others are very highly branched. No written description can adequately portray their wondrous beauty and perfect symmetry. They far transcend



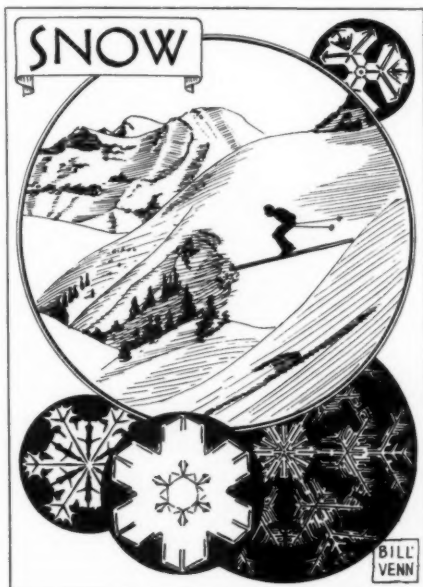
crystals of diamonds. The variations of outline and ornamentation are infinite. Where are the jewelers? Can they produce a handsomer thing than a snow crystal? If you have never looked at one carefully, get out that old magnifying glass and take it out-doors with you during the next snow-storm.

The purity and charm of snow has inspired many men. Thoreau wrote in his diary on January 6, 1858: "Life was not as rich and inviting an enterprise as it should be, when my attention was caught by a snowflake on my coatsleeve. It was one of those perfect, crystalline star-shaped ones, six-rayed, like a flat wheel with six spokes, only the spokes were perfect little pine trees in shape, arranged around a central spangle. This little object which, with many of its fellows, rested unmelted on my coat, so perfect and beautiful, reminded me that virtue had not lost her pristine vigor yet, and why should man lose heart?"

Snow usually appears white. This is because light reflects from so many points of the crystals, like it does from pounded glass, or frost, or foam. Snow, however, is sometimes red, and more rarely green, blue or black, due to the action of innumerable tiny plants called fungi.

And snow is "warm." It will form a blanket over the earth that will keep the young roots and plants from freezing in the coldest weather. This is because it is a very effective insulator, and it prevents the warmth of the earth from escaping into the cold air above. Eskimos and other people use huts covered with snow for homes.

The reason that snow acts as an effective insulator is because it is nine-tenths air, and is one of the best insulators. That is, it doesn't carry heat readily. During the coldest weather ever recorded in Washington, D. C., in February, 1899, the air temperature dropped to fifteen degrees below zero, yet under a thirteen-inch blanket of snow, the ground was not even frozen.



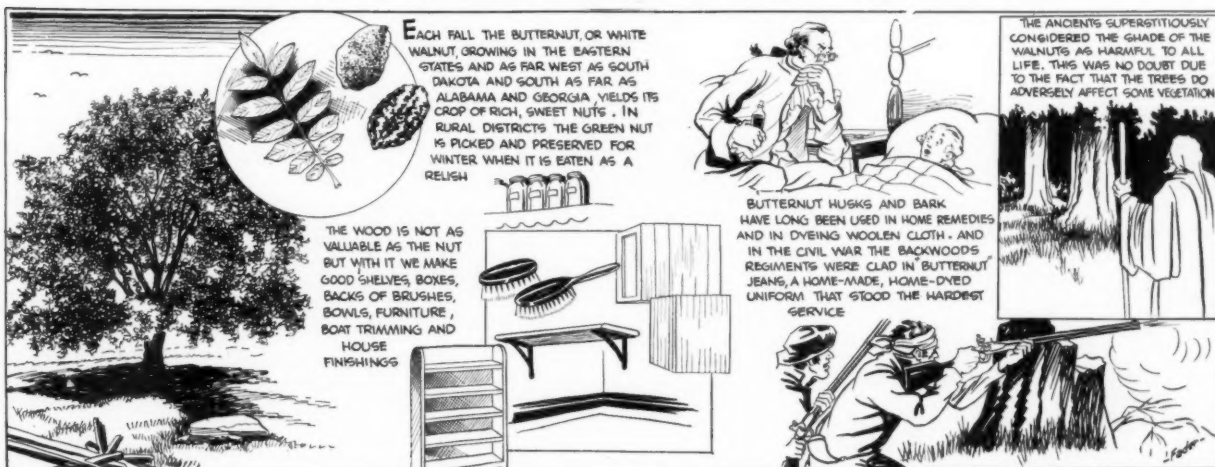
The type of crystals formed during any snow-storm is determined by several factors, such as the height of the clouds, the air pressure, the temperature, and the amount of wind. Similar conditions seem to tend to produce similar types of crystals. Snow sometimes forms without any visible clouds, and there are records of snow-storms from clear skies. This is due to the formation of snow-crystals, directly from molecules of water in the air.

Snow will evaporate without melting. Large snow-drifts will waste away during the coldest of weather. This is also true of ice. If snow is melted, its volume is less. Ten inches of snow would equal about one inch of water.

A covering of snow changes the entire appearance of a landscape. Trees are laden until they bend to the ground, and the peculiar tracklessness just after the snow stops falling, reminds one of a new world just finished. Thousands of sparkling points reflect the sun's rays, and as you walk, these points change rapidly. Now put a cottage under the trees and roof it with snow, then let the smoke curl up towards heaven. That is a picture of winter.

TREES AND THEIR USES

No. 1 - - THE BUTTERNUT or WHITE WALNUT



BUTTERNUT

Juglans cinerea. Linnaeus

BUTTERNUT, or white walnut, grows from southern New Brunswick and Maine through the upper peninsula of Michigan to eastern South Dakota, thence southward into northern Arkansas and the mountains of Alabama and Georgia. It is usually a short-trunked spreading tree seldom more than thirty to fifty feet high and one to three feet in diameter. Occasionally when grown in the forest it attains a height of eighty to one hundred feet and

diameters of three to four feet. Butternut closely resembles its relative, the black walnut, but the general form of the tree is lower and more spreading. Furthermore, it prefers greater moisture, adapts itself more readily to poor shallow soils and will grow under greater extremes of temperature. The name *cinerea* is derived from the Latin word *cinerarius* meaning "of ashes" and probably refers to the ashen color of the bark. The entire scientific name as given by Linnaeus might be translated as "ashen walnut."

The alternate compound leaves are fifteen to thirty inches long with eleven to seventeen leaflets. These have unequally rounded bases, are pointed, have small marginal teeth and are covered with fine sticky hairs. The leaves and fruit drop early, revealing large, conspicuous three-lobed leaf scars on the twigs, each of which is surmounted by a pale gray, raised, downy pad, or "eyebrow." This feature, together with the long downy terminal bud and the sticky leaflets, the sticky leaf stalk and the elongated nut, help distinguish the butternut from the black walnut.

Inconspicuous flowers of both sexes appear on the same trees along with the new leaves in May or early June.



Butternut trees are frequently found in old pastures where they take on the spreading, many-branched form of a short-trunked orchard tree. The large compound leaves are lighter green than those of black walnut, have fewer leaflets, and are sticky to the touch. Usually the crown appears thin and lacking in vigor.

Leaves and nuts fall almost simultaneously in the late autumn, revealing the characteristic "Y"-like branching of the smaller twigs. The tree is seldom symmetrical because of the tendency of side limbs to break during the wind and snow storms. The tendency to develop the under buds on each twig gives the limbs a horizontal rather than upright trend.



Photo by Mrs. J. G. M. Glessner

Long, drooping, yellow-green pollen-bearing catkins hang from the previous year's growth, while the globular pistillate flowers are in groups of three or five on the new growth. These develop into pear-shaped sticky fruits whose pulpy covering or husk encloses a deeply ridged, oblong nut with a rich, sweet, oily kernel which gives the tree its name. The nuts ripen in October. Butternut kernels are widely recognized as a food product and the immature nuts are occasionally pickled.

The light brown, soft, coarse-grained wood may be polished to a satiny lustre, and weighs only twenty-seven pounds to the cubic foot. It is lighter in color and not as strong or durable as walnut. Small amounts are used for cabinet work, interior finish, boat trimming and furniture. No authentic figures of the present stand or annual output are available, but it is doubtful if more than a million board feet of butternut lumber were ever produced in a single year and much less in recent years.

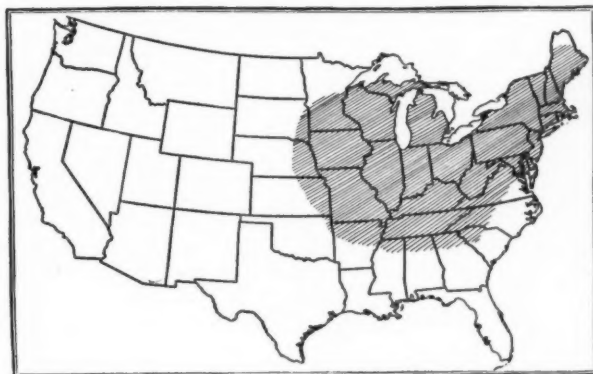
Butternut is more valuable for its nuts than for lumber or shade. The tree is short-lived and seldom attains ages of more than seventy-five or one hundred years. The large spreading limbs are frequently broken by wind or snow and few trees reach maturity without serious injury from insects or fungus diseases. The annual litter from the nuts, the heavy fall of leaves, the low crown and the brittle limb wood discourage its use as a shade tree, but it is a pleasing addition to a spacious lawn. Several strains of rapid growing trees capable of producing large quantities of easily cracked nuts have been reported, so that butternut may find a real place among food crop trees.



Above: The yellow-green compound, highly aromatic leaves are fifteen to thirty inches long, with eleven to seventeen taper pointed leaflets. The pear-shaped nuts are covered with a sticky green husk and mature in the autumn after one year's growth. The oily, highly flavored kernel is frequently used in cooking, and the green, immature nuts are occasionally pickled in vinegar, sugar and spices.

Right: The gray to black bark with broad flat whitish ridges and narrow criss-cross furrows may become three-quarters of an inch to an inch thick. The yellow inner bark is bitter and has mild cathartic properties, and furnishes a brown dye formerly used to color cloth.

Below: Natural range of butternut within the United States.



Left: A greenish-gray winter twig revealing the chambered pith, typical of the walnut family, the alternately arranged triangular, three-lobed leaf scars, the downy side buds with the elongated terminal bud, and the raised downy pad or "eyebrow" between the leaf scar and the bud. These are all characteristic of the butternut.



PRIORITIES IN FOREST RECREATION

(Continued from page 13)

this principle which I am advocating might be worked is to be found where the heroic summits of the Great Smoky Mountains rise, for the most part, in undeveloped grandeur. Today, it is still possible for the hiker or the equestrian to bury himself in the splendid forests of this mountain range. He can still receive the unrivaled thrill of the primitive and the exhilaration of life in the grandest environment a human being can know.

It has been proposed, however, to cut a sixty-foot opening through the forest along three-fifths of this mountain top, build up a road bed, pave it with cement, and make believe that automobilists may then see without effort, the beauty of the primitive. This road is already being built along six of the forty miles of the Great Smokies skyline lying south of Newfound Gap.

A couple of months ago I climbed Clingman's Dome, looking forward to the great joy of undisturbed nature for which this mountain has been famous. Walking along the skyline trail, I heard instead the roar of machinery on the newly constructed highway just below me and saw the great scars which were being made on the mountain. Clingman's Dome and the primitive were simply ruined for me. Returning to where a gigantic, artificial parking place had exterminated the wild mountain meadow in Newfound Gap, I saw papers and the remains of lunches littered all over. There were about twenty automobiles parked there, from at least a quarter of which radios were blaring forth the latest jazz as a substitute for the symphony of the primitive.

From a forestry standpoint, it seemed obvious that there will be considerable windfall among the shallow rooted spruce and balsam along the road, due to the sweep which the wind will get down this opening in the forest. I also anticipate that the drainage which the road will give to the naturally moist forest floor above the right-of-way and the sudden exposure to sunlight which all the trees will receive, is going to upset the moisture balance in this peculiarly sensitive forest type and cause heavy mortality. If my surmise proves true, yet more of the beauty which this road is supposed to exhibit will be a delusion.

Fortunately, the skyline drive in the Great Smokies has thus far been authorized for only six miles. I understand that the next four miles are among the most beautiful in the whole park. From the very nature of automobiling, the tourist on a road could not appreciate at all the subtle values which make these four miles priceless to the walker. Everything of the forest would be seen coldly from without, instead of intimately and as a part of it, and the appeal to the sense of sound, of smell, and of touch would be almost entirely lost. A road down the whole southern portion of the Great

Smokies would give slightly more than an hour of driving to the average motorist. Cooped in between the trees, which cannot be appreciated except to a very minor extent at forty miles an hour, he would not get the pleasure obtainable from a road through meadows and farm lands with its more distant panoramas. Yet, this invasion of the primitive, which would merely give him a short, minor pleasure, would be the ruination of the finest area still left to the walker and camper in the southeast.

On the other hand, the Park Service has proposed a very well planned loop road around and just outside of the north end of the park. This would run from the west end of Newfound Gap at Gatlinburg to the east end at Cherokee. It would give many splendid vistas of the mountains and a day's delightful circuit of the north half of the park which the average tourist would enjoy a great deal better than that more circumscribed drive down the mountain crest. Furthermore, it would not ruin that primitiveness which makes the summit of the Great Smoky Mountains uniquely glorious to the walker.

There are two worlds in which people may live today. The dominant one is the world of the Twentieth Century, with its great cities, its network of boulevards, its almost instantaneous means of communication, its inescapable machinery, and its high-speed, high-tension processes of life. It is the world which most of mankind chooses and while some of us do not find it enough, we do not have the slightest missionary desire to lead others away from it. There is ample room in the United States for all those who want this world of the Twentieth Century to enjoy it to their hearts content, and still leave a few nooks of the second world. It only demands a little planning, a little tolerance of a different mode of enjoyment, and some suppression of the dog-in-the-manger psychology.

The second world does not date to any century but only to the timelessness of the primeval.

It is an impersonal world in which beauty has come into being without the slightest assistance from man.

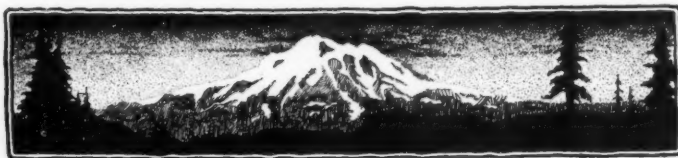
It is a subtle world in which great dramas of nature are enacted only for those who have the leisure and the patience of the primitive.

It is a delicate world which is irreparably ruined by the slightest introduction of artificiality.

It is a peaceful world in which the most instinctive yearnings are at home with environment.

It is a world which to many of us contains the highest values in life.

It is a world which can and must be preserved.



AROUND THE STATES

WITH

THE AMERICAN FORESTRY ASSOCIATION



HUGE PURCHASE OF FOREST LANDS APPROVED

President Provides \$10,000,000 More to Expand National Forests in East.
2,000,000 Acres to be Added, Including Tionesta Tract in Pennsylvania

ALLOCATION of \$10,000,000 of Emergency Conservation funds to be used for the purchase of additional lands for the National Forests in the East was approved by President Roosevelt on December 10. This will make possible early acquisition of the 2,053,169 acres approved for purchase by the National Forest Reservation Commission on November 23—the largest purchase approval ever made by the Commission, and involving an expenditure of \$8,427,663.

This is the second such allocation of emergency funds, the first having been made by the President on July 21, 1933, when \$20,000,000 was provided, making possible the purchase of 6,953,918 acres of forest land in twenty-three states during the past eighteen months—as compared with 4,532,698 acres purchased during the preceding twenty years. The average price authorized for payment on the purchases approved since June 9, 1933, is \$2.80 an acre, while all lands acquired prior to that date averaged \$4.58 an acre.

The latest action of the President in allocating emergency funds for forest acquisition insures the addition of the famous Tionesta tract of virgin hemlock and hardwood forest, in Pennsylvania, to the Allegheny National Forest. This tract of 4,131 acres will be purchased and retained as a Primitive Area for scientific and educational purposes. It holds practically the last surviving extensive stand of virgin hemlock and hardwood forest in the East.

The Tionesta tract is part of an area of 17,513 acres which will be added to the Allegheny National Forest at a cost of \$764,389. In approving the purchase of this area of virgin timber which will be maintained for scientific purposes, the National Forest Reservation Commission embarked upon a policy of a broader purchase program which may include within the eastern National Forests large tracts of mature and merchantable timber rather than to limit so much of its purchases to cutover lands. In Texas, where 415,532 acres will be purchased at a cost of \$2,069,540, more than 93,000 acres approved are more or less mature longleaf pine where the Forest Service contemplates the inauguration of a plan of sustained yield management to tie in with the local communities rather than follow the old principle of "cut out and get out" with the resulting "ghost" towns of previous lumbering communities. As a matter of fact, it was pointed out, social and economic values extend into all the lands approved for purchase.

In addition to approved purchases in Pennsylvania, 702,611 acres in the southern pine region of Florida, Louisiana, Mississippi, North Carolina, South Carolina and Texas will be acquired at a cost of \$3,499,837. In Michigan, Minnesota and Wisconsin, 588,882 acres will be purchased at a cost of \$1,567,447. Purchases in the Ozarks and Central Mississippi regions, comprising parts of Arkansas, Illinois, Missouri and Oklahoma, will total 403,114 acres, to cost \$1,124,018. The total cost for purchases in the Appalachian region, amounting to 299,376 acres, is placed at \$1,714,526. Purchases will be made in Pennsylvania, Virginia, West Virginia, Kentucky, Georgia, Tennessee, South Carolina, North Carolina and Alabama. In Maine, New Hampshire and Vermont, 57,269 acres will be purchased at a cost of \$498,077.

\$527,000 TO FIGHT DUTCH ELM DISEASE

The American Forestry Association's fight for the American elm bore fruit on December 4 when the Public Works Administration allocated \$527,000 for immediate use in the battle against the Dutch elm disease.

The campaign will be waged in New York, Connecticut, and New Jersey, within a radius of fifty miles of the metropolitan area of New York City, where the infection zone centers. The Bureau of Entomology and Plant Quarantine, of the Department of Agriculture, will be in charge of the work.

In addition to this draft upon emergency funds, several companies of the Civilian Conservation Corps will be thrown into the battle. Work will center on cutting down and destroying trees known to be infected and trees in a weakened condition susceptible to the disease. For further details turn to the story on page 33.

A list of the lands approved for purchase, their location, acreage and total cost follows:

New England: White Mountain Unit, New Hampshire and Maine, 35,057 acres, \$336,377; Green Mountain Unit, Vermont, 22,212 acres, \$161,699.

Appalachian: Allegheny Unit, Pennsylvania, 17,513 acres, \$764,389; Monongahela Unit, Virginia and West Virginia, 85,066 acres, \$326,031; George Washington Unit, Virginia and West Virginia, 29,672 acres, \$121,481; Cumberland Unit, Kentucky, 50,433 acres, \$191,928; Unaka Unit, Virginia, North Carolina and Tennessee, 44,234 acres, \$134,601; Pisgah Unit, North Carolina and Tennessee, 1,502 acres, \$6,715; Cherokee Unit, Tennessee, North Carolina and Georgia, 56,775 acres, \$120,440; Nantahala Unit, North Carolina, South Carolina and Georgia, 11,290 acres, \$36,455; Alabama Unit, Alabama, 2,891 acres, \$12,483.

Southern Pine: Wambaw Unit, South Carolina, 27,935 acres, \$616,638; Osceola Unit, Florida, 167 acres, \$1,046; Ocala Unit, Florida, 7,505 acres, \$15,296; Appalachian Unit, Florida, 8,040 acres, \$20,331; Holly Springs Unit, Mississippi, 20,151 acres, \$69,221; Bienville Unit, Mississippi, 69,962 acres, \$145,745; Chickasawhay Unit, Mississippi, 3,583 acres, \$7,987; Leaf River Unit, Mississippi, 12,611 acres, \$22,619; Biloxi Unit, 457 acres, \$1,092; Homochitto Unit, Mississippi, 22,315 acres, \$104,033; Kisatchie Unit, Louisiana, 7,333 acres, \$10,028; Croatan Unit, North Carolina, 50,629 acres, \$139,633; Uharie Unit, North Carolina, 4,068 acres, \$18,327; Enoree Unit, South Carolina, 37,818 acres, \$184,319; Long Cane Unit, South Carolina, 14,505 acres, \$73,978; Angelina Unit, Texas, 58,454 acres, \$102,294; Davy Crockett Unit, Texas, 151,140 acres, \$1,374,487; Sam Houston Unit, Texas, 114,644 acres, \$318,876; Sabine Unit, Texas, 91,294 acres, \$273,882.

Ozark and Central Mississippi: Ouachita Unit, Arkansas and Oklahoma, 32,708 acres, \$84,694; Ozark Unit, Arkansas, 22,157 acres, \$68,319; Clark Unit, Missouri, 80,109 acres, \$167,162; Frisette Unit, Missouri, 56,941 acres, \$111,807; Cassonada Unit, Missouri, 30,220 acres, \$66,477; Pond Fork Unit, Missouri, 27,961 acres, \$50,020; Gardner Unit, Missouri, 40,325 acres, \$108,765; Wappapello Unit, Missouri, 53,992 acres, \$113,381; Illini Unit, Illinois, 26,278 acres, \$191,862; Shawnee Unit, Illinois, 32,423 acres, \$161,527.

Lake States: Huron Unit, Michigan, 9,428 acres, \$27,928; Manistee Unit, Michigan, 32,504 acres, \$77,188; Marquette Unit, Michigan, 169,764 acres, \$258,434; Hiawatha Unit, Michigan, 24,416 acres, \$57,563; Ottawa Unit, Michigan, 47,377 acres, \$253,014; Baldwin Unit, Michigan, 8,060 acres, \$21,587; Cusino Unit, Michigan, 17,187 acres, \$29,587; Higgins Lake Unit, Michigan, 1,686 acres, \$3,401; Houghton Lake Unit, Michigan, 1,276 acres, \$3,008; Lunden Unit, Michigan, 240 acres, \$720; Macinac Unit, Michigan, 1,432 acres, \$11,248; Muskegon Unit, Michigan, 160 acres, \$3,200; Ogemaw Unit, Michigan, 160 acres, \$388; Argonne Unit, Wisconsin, 89,569 acres, \$293,636; Oconto Unit, Wisconsin, 47,334 acres, \$92,851; Mondeaux Unit, Wisconsin, 2,805 acres, \$6,831; Flambeau Unit, Wisconsin, 1,989 acres, \$6,650; Chequamegon Unit, Wisconsin, 14,374 acres, \$37,375; Moquah Unit, Wisconsin, 2,320 acres, \$4,336; Mesaba Unit, 8,818 acres, \$18,839; Superior Unit, 49,955 acres, \$228,463; Chipewewa, Minnesota, 58,028 acres, \$130,921.

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**COMMITTEE OF U. S. CHAMBER FAVORS CENTRALIZED
LAND USE IN AGRICULTURE**

Centralization in the Department of Agriculture of federal activities having to do with the acquisition and administration of submarginal lands, the administration of erosion control projects, and grazing and other agricultural activities on the Public Domain is recommended by a special Land Policy Committee of the United States Chamber of Commerce in a report made to the Chamber's directors at their meeting in Washington on November 16.

The report discusses in considerable detail essential policies which should govern in the formulation of a broad land policy in the United States and makes specific recommendations in respect to such phases of the question as land classification, the adjustment of agricultural production to demand, conservation of soil resources, the marginal land problem, forestry, the Public Domain, federal reclamation, land settlement and colonization, and land use planning. Action on the report and its recommendations will be taken by the Chamber at its annual meeting next May.

While the committee does not deal directly with the question of grouping federal activities dealing with land administration and conservation, its position is clearly that forestry, erosion control, and grazing administration of the Public Domain should be grouped together in the Department of Agriculture. Forestry is already in this department, but the committee's recommendation that erosion control and grazing on the Public Domain should be in the same department unquestionably refers to the Soil Erosion Service and the newly created grazing bureau in the Department of the Interior.

The committee's specific recommendation in respect to the present divided departmental authority is as follows: "The administration of a national program of land utilization can be most effective only if centralized in one department of the government. The committee recommends that federal acquisition and administration of submarginal

land, administration of erosion control projects, and grazing and other agricultural activities on the Public Domain should be centralized in the United States Department of Agriculture."

Bearing further upon the diversified character of the federal government's activities in land matters, the committee recommends the establishment of a federal land use planning agency "to coordinate the activities of all federal departments concerned with land use and to cooperate with the States, counties, and land owners in the solution of their land utilization problems."

In respect to forestry the report, among other things, discusses the issue of whether the growing of trees for a national timber supply should be done by private enterprise or by government, and it supports the position already taken by the Chamber that this should be done mainly by private enterprise. To that end it recommends that federal and state governments should cooperate in measures to make it practicable for private individuals to engage in commercial forestry. It emphasizes as the most important measures necessary adequate fire prevention, tax systems appropriate to the growing of timber, and encouragement of the sustained yield principle of forest management. It recommends specifically that the conservation program now under way by forest industry under the Lumber Code should have the active support of both federal and state governments.

In respect to the large program of federal land acquisition for public forests as recommended by the Forest Service in the Cope-land Report, the committee withholds endorsement, declaring that while the Chamber has approved the principle of government acquisition of forest land, the committee "is reluctant to endorse at this time such an extensive program as is set forth by the Forest Service, particularly in regions where conditions are favorable for growing trees commercially by private enterprise."

LARGER TETON NATIONAL PARK FAVORED

The Board of Directors of The American Forestry Association, at a meeting held in Washington December 7, voted favorably on the proposal to enlarge the Teton National Park in Wyoming. The proposal took definite form during the concluding days of the last Congress when Senator Carey of Wyoming introduced a bill designed to accomplish the two-fold purpose of preserving the natural beauty surrounding the Tetons and to provide adequate feed for the southern elk herd during the winter season. The bill contemplated adding to the park on its eastern side approximately 60,000 acres now in the Teton National Forest and 30,000 acres in the Public Domain. The plan of enlargement further contemplates inclusion of some 40,000 acres which Mr. John D. Rockefeller, Jr., it is understood, has offered the Government for park use. The lands in question were acquired by Mr. Rockefeller with the object of preserving and restoring some of the natural beauty of the region and of providing suitable areas where hay could be raised for the winter feeding of elk.

In view of the fact that the proposed enlargement raised the issue of including as a feature of the Park the Jackson Lake Reservoir and necessary rights-of-way for commercial use in transferring logs and livestock through Jackson Hole, The American For-

estry Association, when the Carey bill was introduced, requested the Committee on Public Lands to withhold action until the proposal could be more adequately studied by those interested in National Park welfare. During the summer a committee of the Association's Board had the question under consideration and at the meeting on December 7 submitted its report. While endorsing the objectives and purposes of the Carey bill the committee felt that it involves the principle and possibly the precedent of including commercial features in National Parks and from that standpoint is destructive of National Park ideals and the maintenance of National Park standards. The committee felt that the purposes sought by the bill can be obtained without thus jeopardizing National Park standards through coordinating action on the part of federal agencies now having jurisdiction over the lands involved.

The viewpoint of the committee was not shared by a majority of the Board who felt that the preservation of the natural scenery adjacent to the Tetons can be best assured by enlargement of the Park and that the action under the circumstances will not form a precedent destructive to National Park ideals or standards. The Board, therefore, passed a minute endorsing the objectives and purposes of the Carey bill.

P. W. A. Funds for Elm Protection

Responding to public demand that an aggressive warfare against the Dutch elm disease be maintained, the federal government on December 4 announced an allocation by the Public Works Administration of \$677,000 to be used immediately in the effort to save the American elm. The amount allocated, however, is necessarily reduced so far as working funds are concerned by \$150,000, due to the fact that the appropriation act passed by the last Congress provided that in the event emergency funds were later made available, the regular appropriation would be a debit against them. Accordingly, the net amount now available for resumption of control and eradication work, which was suspended early in the fall because of exhaustion of regular funds, is \$527,000.

As this issue goes to press the Bureau of Entomology and Plant Quarantine was marshaling its forces to take up again the fight on the Dutch elm disease. In the infected zone embracing 4,500 square miles surrounding New York City the immediate work contemplated is removal of some 1,300 trees definitely known to be infected with the disease. At the same time, work is being started to remove some 50,000 dead, dying, or seriously weakened elms which are considered disease carriers. Destruction of these dead and weakened trees, authorities believe, is necessary in order to remove a serious source of infection and spread.

More than 2,000 men including workers on relief funds and several hundred C.C.C. men will be employed in cutting and destroying the infected and suspected elm trees during the winter and early spring, according to L. H. Worthley, in charge of the work with headquarters at White Plains, New York. Much of the work in municipalities and along highways carrying heavy traffic will be done by the municipal authorities and commercial tree men who are equipped to let the heavy limbs down with ropes at least risk to property and traffic. The C.C.C. workers will be employed in wooded areas and in the rural districts. Similar infected trees removed during the past year have cost about one dollar a diameter inch, or an average of eleven dollars for each elm tree removed and destroyed.

The half million dollars now available is not expected to complete control of the disease or effect full safety for the elms. At least a million dollars more will be needed in the early spring and additional sums must be called for as the progress of the disease under American conditions reveals itself.

The present allotment brings the total Federal and State appropriation made since July, 1932, for the eradication of the disease to \$1,278,500, of which all but \$247,500 has come from the federal government. To cooperate with federal efforts New York State has appropriated \$172,500 for control and \$30,000 for research; New Jersey, \$30,000; and Connecticut, \$15,000. With this money, scouting has been carried on throughout the northeastern and central states, research has been conducted, plans developed for carrying on the campaign, and some 7,000 elm trees destroyed as of November 30.

400,000 Under Lumber Code

A total of 400,000 persons are now employed in the lumber and timber products industries, according to an estimate based on reports to the Lumber Code Authority's administrative agencies from 5,000 plants, accounting for over one-half of the production compared with estimated total production.

The total payroll is estimated at over \$27,000,000 a month, with workers subject to maximum hours under the Lumber Code averaging thirty to thirty-four hours per week.

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PLANNED USE OF NATURAL RESOURCES IS PROPOSED

National Resources Board Recommends Gigantic Program of Long-Range Handling of Nation's Lands, Forests, Waters and Minerals

Holding that the natural resources of America are the heritage of the whole nation, President Roosevelt's National Resources Board, in a report made public December 17, recommends an unprecedented program of long-range national planning for the conservation and use of the country's resources. "This is the first attempt in our national history," the Board states in its letter of transmittal, "to inventory our national assets and the problems related thereto." The outstanding recommendation of the Board is for the establishment of a permanent agency to chart and direct on a scientific basis the nation's treatment of its natural resources.

The federal machinery proposed to carry out such a program is:

(1) The creation under the Board of a permanent land planning section and a permanent water planning section. The function of the former would be to serve as a clearing house for all projects involving purchase of lands by federal agencies and to recommend and advise in respect to bureau jurisdiction over lands, coordination of land management policies and research projects. An advisory committee to the land planning section would be provided and would consist of representatives of the federal bureaus concerned with land problems. The functions of the water planning section would be to develop constructive programs for the use of the country's water resources in the public interest, to investigate water policies and to initiate researches to provide water use data.

(2) The establishment of a permanent Public Works Administration to prepare a six year budget of constructive or longer-range program of public works, revised annually, for submission through a public works committee to the President and the Congress. Its further function would be to negotiate with local, state and regional authorities and to determine lump sum allocations among federal, state and local agencies. Under it would be a series of advisory planning committees for the continuous study of public works projects.

(3) The establishment of a national planning board consisting of five members appointed by the President to serve as a general staff for the Chief Executive. The functions of the Board would be advisory rather than executive, and it would be responsible for proper coordination of all planning policies within the Federal Government and as between the Government, the states and local agencies.

The Board's report embraces many pages and presents a critical analysis and discussion of the country's natural resources and problems relating thereto. It represents many months' work of practically every federal agency having to do with the organic and inorganic resources of the country. Released just as this issue of AMERICAN FORESTS goes to press, time permits only a summary of the Board's more outstanding findings and recommendations. More exhaustive comment on the stupendous proposal will be made in the next issue and in subsequent issues as different phases of the plan are presented to Congress.

The program of the Board if carried through would:

"1. Provide for the systematic development of our water resources for purposes of sanitation, power, industrial uses, transportation,

recreation, domestic consumption, and other collateral uses on a far higher level than ever before.

"2. Remove the recurring menace of great floods and vast losses to persons and property.

"3. End the heavy losses of soil caused by uncontrolled erosion.

"4. Eliminate the use of land incapable of affording a minimum standard of living, develop agricultural production on the most suitable soils only, and aid in raising the standards of living in many agricultural regions.

"5. End the wasteful use of our mineral resources and substitute a national policy of mineral conservation.

"6. Make available large areas of land for purposes of popular recreation.

"7. Assemble basic data in regard to mapping, public finance, and population, necessary for national planning.

"8. Avoid the extravagance caused by failure to coordinate public works—Federal, State, and local; bring about better programming of socially useful public works; prepare public works projects suitable, if desired, for use in emergency situations.

"9. Provide for continuous long-range planning of land, water, and mineral resources in relation to each other and to the larger background of the social and economic life in which they are set."

Under long-range land management, the Board recommends among other things continued retirement of submarginal lands at a rate of about five million acres a year for the next fifteen years, additions to national and state forests, parks and wildlife refuges, enlargement of Indian reservations, blocking up of delinquent tax areas in cooperation with states, repeal of the homestead and selection laws, classification of lands for use by federal agencies in cooperation with the states and zoning of land areas by states and counties.

Forestry

There is ample land, the Board states, to meet the timber requirements of the nation, but the present trouble is that much of this land is either wrecked or on its way to destruction. "The essential need, therefore," the report asserts, "is for forest policies that will put our available forest areas in condition to provide the various benefits which forests should contribute to national well-being." Specific recommendations are:

(a) That the Federal Government and the states take over through tax delinquency or otherwise in public ownership "such wrecked or other areas as are clearly unsuited for private ownership, either because they hold out no promise or profit when managed in accordance with the principle of sustained yield, or because there are associated with them social values which cannot be possibly entrusted to the custody of private interests.

(b) More scientific readjustment of tax burdens on forest lands.

(c) Public loans to private forest industries at low interest rates conditioned on the practice of sustained yield management and reasonable safeguard of public interest.

(d) Public aid in the protection of forests from fire, insects and disease.

(e) Public regulation of timber cutting on private land "provided that industrial self-government proves unavailing to realize these objectives."

(f) Public acquisition or exchange of forest

land and timber to aid private owners in liquidating part of their holdings.

(g) Reduction of the excessive volume of timber going to market particularly on the Pacific Coast.

(h) Federal aid to states in the distribution of forest planting stock to farmers.

In respect to forest industry, the Board states, "in so far as possible we should rely on industrial self-regulation for the development of sound forest management on privately owned lands adapted to such management. It seems probable, however, that a certain amount of collaboration by the federal and state governments with the administration of the industry will be requisite in order to bring non-conforming owners into line." To this end the Board proposes: Cooperation of the Federal Government and the states with the administration of the industry in maintaining adequate technical forces to review management plans developed by forest owners, to inspect woods operations and production records and to advise as to forest practices; ample penalties for violations enforceable under the police powers of the states or by a combination of state and federal action; management of small holdings, farm woodlands, etc., to be integrated with a general program of planned land use through such public provisions as are recommended in this report for conservation of soil or farm lands.

Wildlife

Declaring that the principal need for specialized wildlife areas is for bird refuges where the birds may rest and breed undisturbed by man, the Board supports further extension of the system of public wildlife refuges both for waterfowl and for upland game. It further emphasizes that game policies of the federal agencies should be more closely integrated and that these policies in turn should be more adequately coordinated with those of the states.

Public Grazing Ranges

Condemning the *laissez faire* policy of the Federal Government in respect to use of the Public Domain, the Board recommends that the provisions of the Taylor Act be extended to include such parts of the unreserved Public Domain as may be primarily used for grazing and that the grazing policies of the Forest Service and the Grazing Administration be coordinated. It further recommends that advantage be taken of the exchange provisions of the Taylor Act to block up districts in public ownership. Policies should be formulated, it declares, in cooperation with the states for federal and state aid in areas where assessments are reduced or lands withdrawn from taxation due to development of extensive grazing operations.

Soil Erosion

One of the most acute problems of agricultural land use, the Board points out, is soil depletion. "A careful estimate made for the Land Report, the Board states, indicates that on our crop and pasture land there is an average annual loss of 322,000,000 tons of organic matter and a net loss of 222,000,000 tons. *** It is estimated that usefulness for farming of 35,000,000 acres has been completely destroyed, that the top soil has been nearly or quite removed from an additional 125,000,000 acres and that another 100,000,000 acres are starting in that direction." To adequately deal with the problem the Board recommends that erosion control policies aim at the establishment of control measures on all of the more seriously eroded areas in ten years and effective checking in twenty years. State cooperation should be secured through enactment of regulatory legislation and active work by appropriate state agencies. As a further aid it recommends that farm-mortgage credit and

production-adjustment programs of the Federal Government be related to erosion control activities and conditions.

Recreation

Asserting a rapidly growing need for outdoor recreation due to increasing leisure, the Board asserts that adequate opportunity for outdoor recreation is one of the most important forms of defense against anti-social influences. It would make it a function of the National Planning Board to aid in integrating plans of different agencies, both federal and local, in developing adequate forms and opportunities for wholesome recreation. It stresses the need of expanding municipal, county and state parks. Present state, municipal and county park systems, it suggests, should be increased from 3,800,000 to 10,000,000 acres. In respect to federal lands embracing the Public Domain and the National Forests and Parks, the Board points out that they offer a vast potential asset in the recreational system, but that in most instances recreation is subordinate to other major uses. It suggests certain additions to the National Park system by transfer from other federal administrative agencies and increases in both National Parks and Forests in the eastern part of the United States.

Water Resources

In planning for water the country must take a long view and think in terms of conservation as well as in terms of current use, the Board declares. The general objectives set up for the Water Planning Committee are to develop more productive uses of water resources—power, water supply, navigation, irrigation, recreation—to eliminate, modify or neutralize harmful influences of water, such as floods and erosion, and to eliminate or modify pollution and waste through run-off and drainage.

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The Joint Committee of the Forest Conservation Conference, which last winter formulated the program of conservation to be carried out as a part of the Code of Fair Competition of the Lumber Industry, met in Washington November 26 to take stock of the progress made to date and to consider action necessary to make the program more fully operative. Those in attendance at the meeting included D. T. Mason and John B. Woods of the Lumber Code Authority, E. H. Clapp, B. F. Heintzleman and B. P. Kirkland of the Forest Service, Wilson Compton of the National Lumber Manufacturers Association, Ovid Butler and G. H. Collingwood of The American Forestry Association, A. G. T. Moore and A. E. Wackerman of the Southern Pine Association, Franklin Reed of the Society of American Foresters, Ed. R. Linn of the Southern Hardwood Association, F. M. Ducker of the Northern Hemlock and Hardwood Association, W. G. Howard of the Association of State Foresters, Ward Shepard of the Indian Service and A. B. Recknagel of the Northeastern Lumbermen's Association.

Mr. Mason, Chairman of the Committee, opened the meeting with a review of conditions with which the Lumber Code Authority had been confronted in making its part of the conservation program operative. He referred particularly to the confusion which developed shortly after the rules of forest practice became effective, because of inability of the Code Authority to maintain price control in the absence of enforcement machinery by the N.R.A. During the summer, he stated, the situation became so bad as to threaten the existence of the whole Lumber Code. Although these conditions have been improved this fall by prosecution of code violators by the Government, there are a number of adverse decisions being carried to the higher courts which make the future of the price structure of the Code uncertain. In addition, one division of the industry is opposing price control and will be heard by the N.R.A. on December 11. Mr. Mason expressed confidence that the difficulties which have beset the Lumber Code will be conquered and that the Code will remain effective. Because of the constant pressure of problems that threaten the existence of the Code, he stated that forestry has necessarily had to be subordinate to other provisions but that in spite of all difficulties real progress has been made under the conservation article.

John B. Woods, Secretary of the Committee, summarized briefly what the various divisions of the lumber industry have done in organizing their conservation work. The rules of forest practice applicable to all private operators coming under the Code became effective June 1 last and at the present time there are twenty-two technical foresters employed by the ten divisions of the industry. Three factors, he said, have delayed work in certain divisions: namely, lack of funds due to delay by the N.R.A. in approving forestry budgets, to the general critical situation of the Code and to delay on the part of the N.R.A. in bringing operators of pulpwood and other related forest industries in line with conservation practice. These factors have retarded the employment of technical men in all divisions east of the Rocky Mountains. The last mentioned factor has complicated the situation, particularly in the northeast, where pulp and mine operators constitute a large volume of the forest output. Failure to apply conservation practice to pulpwood and mine timber operations has so complicated the situation

that it has seriously handicapped the application of forest practice rules in that territory. Nevertheless the northeastern division is attempting to go forward and has employed a forester, Mr. Robert Moore, formerly of the Forest Extension Division, United States Department of Agriculture.

Mr. Woods reported that great progress has been made along the lines of fire protection, cutting so as to encourage restocking and the blocking up of sustained yield units. Fire protection measures by the industry, he said, have gone beyond the requirements of state law and many small operators for the first time are realizing their responsibilities. As regards sustained yield operations, Mr. Woods stated that nine companies, representing approximately 1,600,000 acres of land, have qualified under the special recognition afforded by the Code. In addition, four applications are pending which involve approximately two million acres. Studies during the summer, it was brought out, have revealed quite a number of other lumbermen whose operations really are on a sustained yield basis although they have said nothing about it and have made no application for sustained yield certification under the Code. In concluding his summary, Mr. Woods said that the administration of forest practice rules is going forward in a manner which when regarded in the light of manifest difficulties should be considered satisfactory.

Mr. Heintzleman, representative of the Forest Service in the forest practice work, reported there are now seventeen forest service officers working in connection with the conservation article of the Code and that it is the plan of the Service to enlarge this force to thirty-one men in order to provide adequate cooperation to all Lumber Code Divisions. He outlined their work as first, to inspect operations as representatives of the Forester so as to be able to report upon the extent and degree of compliance; and second, to cooperate with industry in field investigations of forestry problems, the testing of forest practice, public relations and sustained yield investigations.

Mr. Linn of the Appalachian and Southern Hardwood Agency told the meeting that he had just completed a swing around his territory and that he was impressed by the very large number of operators under their jurisdiction who are observing fire and cutting regulations that equal or exceed the requirements of the forest practice rules. Mr. Recknagel reported that the Northeastern Division Agency has had many difficulties and are just now getting started. These difficulties arise out of the unfair situation with which persons under the Lumber Code are confronted in trying to carry on in competing with operators in the same region who are not under any code and therefore not subject to the wage and hour provisions of the forest practice rules. He urged early approval of the President's amendment to bring other forest-using industries under the Lumber Code.

In the southern pine region Mr. Moore reported that the number of operators observing the conservation code is much greater than is generally known. The Southern Pine Agency has recently added two foresters to its staff and is developing its forest practice work as rapidly as conditions and facilities permit.

Mr. Clapp of the Forest Service summarized the status of public cooperation, stating that enactment of the legislative program will

help crystallize public action. While the public program as formulated last winter failed to receive approval by the President, Mr. Clapp stated that considerable progress has been made along some of the lines contemplated. As regards public acquisition of lands he stated that during the past year federal purchases for National Forest areas are fifty per cent greater than all previous purchases. He emphasized the work of the C.C.C. camps in fire protection on private lands, stating that it had exceeded that on National Forests. The forest survey, he reported, had been speeded up three or four times and work in some fields of research has been broadened. Study of the problem of forest credits by Mr. Kirkland, he reported, had had to be interrupted, but has been recently resumed and should be completed on January 10. The report on forest taxation will likewise soon be available. He also stated that a forest acquisition policy is now in process of development in the Forest Service.

Upon the suggestion of Mr. Shepard of the Indian Service, a publicity committee to keep the public more informed as to the progress of the program was appointed, with Ovid Butler, Secretary of the American Forestry Association, as Chairman. Dr. Wilson Compton, Secretary-Manager of the National Lumber Manufacturers Association, urged that proposed legislation be brought into focus as quickly as possible. The Code, he declared, must be made to work; it is a two-party affair in which public cooperation is essential. He referred to a small but vocal minority who are already crying that conservation under the Code is a failure, but he declared "there is also an industry group that feels that public cooperation has failed and neither of these elements reflects the actual situation." He declared that he has been assured that Secretary Wallace desires to see a general bill enacted containing all provisions for legislation and administration and is ready to push such a measure as soon as it is placed before him.

Revision of the bill formulated last spring to carry out the public measures inherent in the Code program of conservation is underway, and it is the plan of the Committee to have it in shape for submission to Congress when that body meets early in January.

Biological Survey to Administer Wichita Forest Game Preserve

On July 1, 1935, the administration of the Wichita National Forest and Game Preserve, in Oklahoma, will come under the supervision of the Biological Survey in order to provide a laboratory within which there may be wildlife research under field conditions.

Located near Cache, this 61,000 acre tract was first established as a National Forest by President McKinley in 1901, and was made a National Game Preserve in June, 1905, by President Theodore Roosevelt. Since that time, its resources have been developed under Forest Service administration. To perpetuate the foundation stock of the western range-livestock business, and as a memorial to the late Senator John B. Kendrick, of Wyoming, sponsor of the enterprise, a herd of ninety-nine longhorn cattle has been developed from twenty-seven head purchased in 1927. More than 200,000 recreationists, who use the area each year, have watched the growth of a buffalo herd which now numbers more than 300 head, of an elk herd which has increased to more than 325 head, of deer which, under protection, have reached some 450 head, and of wild turkeys which have multiplied from a few head to more than a thousand.

It is this wildlife development which has helped make the Wichita area so valuable as a wildlife field laboratory. Here the Biological Survey will have opportunity to continue and amplify its wildlife research under natural conditions; to add to its knowledge, gained over many years, of the life and feeding habits, diseases and parasites, of big game; to work out and apply methods for determining the carrying capacities of game ranges and for eliminating damage done to those ranges by rodents and erosion.

Duck Stamps May Reach a Million

The Migratory Waterfowl Hunting Stamp, better known as the "Duck Stamp," returned \$356,000 up to November 30th, to the Post Office Department for transfer to the United States Bureau of Biological Survey for the purchase and maintenance of waterfowl refuges. The stamps are still selling and according to the American Game Association, the total sales for this shooting season will reach somewhere between \$750,000 and \$1,000,000.

No one knows how many waterfowl hunters there are in the United States, but the number of purchasers of the duck stamps will give one a fair idea. When the seasons in all of the states will have closed officials of the government will be able to determine approximately the proportion of waterfowl hunters to upland game hunters. Guesses, based upon personal observation by veteran hunters, hold that not more than one out of seven hunters hunt migratory waterfowl.

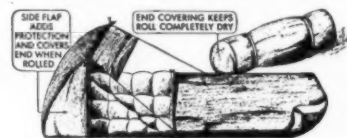
Present sales indicate that nearly a million duck stamps will be sold. They cost \$1 each and must be had in addition to state hunting licenses. An unexpected source of revenue has been the purchasing of this unique stamp by stamp collectors. It is the first stamp ever issued by the post office for such a purpose. Collectors have been buying an appreciable number of them.

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President Reserves 22,000 Acres Adjoining Harney National Forest

President Roosevelt, by Executive Order, has withdrawn from entry under the public land laws tracts aggregating approximately 22,000 acres in Fall River County, South Dakota, pending determination as to the advisability of including these lands in the Harney National Forest. They form portions of an 87,200-acre area lying along the southern boundary of that National Forest.

Although title to approximately three-fourths of the area has passed from the government, nevertheless it is found that approximately 25,000 acres have been forfeited to Fall River County for non-payment of taxes and that about 16,000 acres are now tax delinquent. This indicates that the lands have a low value for any agricultural use. About 55,000 acres of the entire tract contain timber stands varying in amounts. Some of the commercial timber has been removed. It is estimated at the present time, however, that there is approximately 80,000,000 board feet of timber within the area.

Government Acquires Mattamuskeet

Mattamuskeet Lake, a 50,000-acre tract in eastern North Carolina, and one of the greatest goose, swan and duck wintering grounds along the Atlantic Coast, has been purchased by the United States Biological Survey as a concentration ground for wildlife.

Most of the area will be set aside as an involuntary refuge, but the remainder will be open to hunting under supervision of the Biological Survey and the North Carolina Department of Conservation. A maximum of 60 hunters may be accommodated daily. Under forest management.

During the past year, the owners of Mattamuskeet endeavored to obtain \$12,000,000 from the Public Works Administration to drain the lake for farming purposes and to establish a number of model homesteads. Conservation organizations immediately launched a campaign against such a proposal.

Book Reviews

WILD FLOWERS, by Homer D. House. Published by The Macmillan Company, New York City. 362 pages and 364 full color illustrations. Price \$7.50.

Seldom have beauty and technical accuracy been so happily combined as in *WILD FLOWERS*, by New York's State Botanist, Dr. Homer D. House. The price brings it within reach of many who wish an authoritative and easily used book combining accurate descriptions with truly artistic life size color photographs of the common wild flowers.

In submitting the book to the reading public, Dr. House writes,—"The present volume is offered, with its wealth of color and form, scarcely approaching the beauty of the growing and living plants depicted, with the hope that the interest which it may stimulate in our native and naturalized flowers will become a potent force for their preservation and protection."

Scarcely anything short of the woods in spring could be more stimulating to an interest in wild flowers than this beautiful book.

—G. H. C.

THE NATURE LOVER'S KNAPSACK, Edited by Edwin Osgood Grover. Published by Thomas Y. Crowell Company, New York City. 304 pages. Price \$2.50.

As indicated by the title, this book contains a collection of verse that will appeal to the lover of the open road. It contains 250 poems by 150 different authors, and covers both American and English poetry. The poems are grouped under such headings as "Traveller's Joy," "Sky-Born Music," "Green Things Growing," and "The Call of the Sea," and while many old friends will be found throughout the book, it is also rich in contemporary poetry.

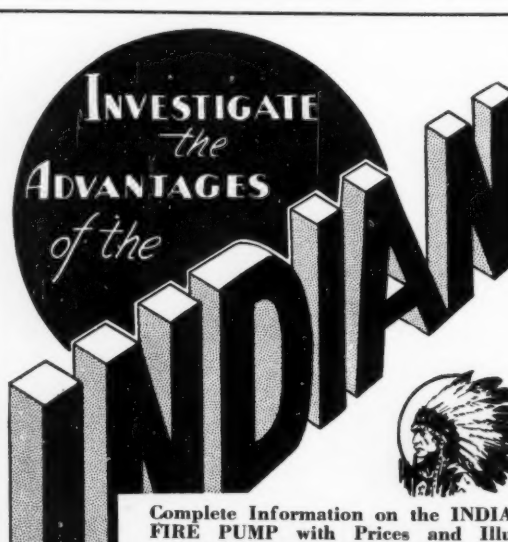
Tuck it in your knapsack when you start off on a week-end jaunt, or read it to yourself and your friends on a winter evening by an open fire; its charm will hold you on any occasion.—M. C. H.

FLORA OF THE PRAIRIES AND PLAINS OF CENTRAL NORTH AMERICA, by Dr. Per Axel Rydberg. Published by The New York Botanical Gardens, New York City. 969 pages with numerous line drawings. Price \$5.50.

"Flora of the Prairies and Plains of Central North America," published after the death of Dr. Rydberg on July 25, 1931, gives a detailed and authoritative description of the plants native to the states of Kansas, Nebraska, Iowa, Minnesota, South Dakota and North Dakota together with southern Manitoba and south-eastern Saskatchewan. As stated in the preface by the editor, Dr. Marshall A. Howe, of the New York Botanical Gardens, "It includes also most of the species occurring in the prairie regions of Illinois, southern Wisconsin and northern Missouri and on the plains of eastern Colorado, eastern Montana and southern Saskatchewan." In covering these prairie states this book is unique among all others previously published.—G. H. C.

THE YELLOWSTONE NATURE BOOK, by M. P. Skinner. Published by A. C. McClurg & Company, Chicago. 221 pages, illustrated. Price \$1.25.

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QUESTION: Where may one best see large herds of buffalo under fairly natural conditions?—E. B., New Jersey.

ANSWER: The Biological Survey reports that the principal herds of Bison are in Yellowstone National Park, and on the National Bison Range at Moiese, Montana. There is also a herd on the Wichita National Forest and a few animals in the vicinity of House Rock, Arizona, and on other reservations. There are a few private herds including one in the vicinity of Pierre, South Dakota. The Biological Survey also maintains a small herd in Alaska. The principal herds of Bison in Canada are located at Wainwright and on the Wood Buffalo Park, north and west from Lake Athabasca.

QUESTION: What is the total weight of one of the Big Trees of California?—H. T., New York.

ANSWER: Measurements of the General Grant Tree in the General Grant National Park as prepared by the National Park Service show this tree to stand 266.6 feet high, with diameters of 21.8 feet on one axis and 26.8 feet on the other axis at ten feet from the ground. According to figures of their engineers, the total volume of the main stem exclusive of side branches, foliage and bark is 43,767 cubic feet. Assuming the green weight of the wood to be fifty-five pounds a cubic foot, comparable to that of redwood, the total weight of the main body of the tree is 2,407,185 pounds. Were the branches, foliage, bark and roots included, the total weight would approximate 3,000,000 pounds.

QUESTION: What constitutes full maturity of a stand of timber?—G. D. B., Michigan.

ANSWER: This may be answered from several points of view. Practically speaking, however, maturity of a commercial forest is a financial matter. The costs of holding timber land mount so rapidly that cutting may be financially justified before the trees have attained their greatest size, while they are still growing and while the stumpage value is only moderate.

QUESTION: Publications from the Forest Service, The American Forestry Association and other sources refer to black oak and yellow oak as the same tree. Why is this?—B. T., Washington, D. C.

ANSWER: Black oak (*Quercus velutina*) is frequently called yellow oak. The word "black" possibly refers to the dark rough bark, while "yellow" may apply to the orange-yellow inner layer of bark. This can be revealed with a penknife. Confusion often arises in the use of common names. At least two other oaks are described as "yellow," but neither has the commercial importance of *Quercus velutina*.

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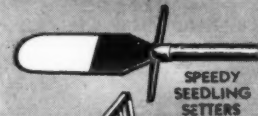
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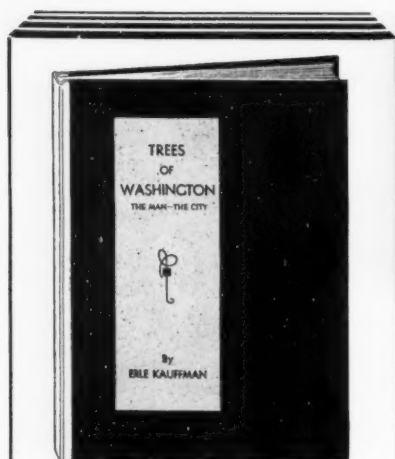
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The
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1713 K Street, Northwest
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New Haze Meter

A new Haze Meter to be used by Lookouts to determine the distance they should be able to see a standard size of smoke under any existing atmospheric conditions, has been devised by Mr. George M. Byram employed at the Pacific Northwest Forest Experiment Station. This invention is based on the discovery that a smoke column is just visible to lookouts with good eyesight against a background approximately 60 per cent as bright as the sky at the horizon. It provides a simple mechanical means for finding the background that is 60 per cent as bright as the horizon. Measurements are made in terms of the distance that the lookout should be able to see a standard size of smoke under any existing atmospheric conditions.

Sheath Knife for Foresters

Every forester finds many uses for a Sheath Knife. The Cutlery Division of the Remington Arms Company has developed a new line of knives of real interest to foresters. The Sheath Knife particularly recommended for Foresters is No. RH 32. The overall length is 8½ inches, the blade being 4½ inches long. The handle is of leather, colored fibre and nickled-silver discs. The knife itself has a nickled-silver thumb guard. The sheath is of oak tanned leather with snap fastener loop with slits large enough to fit any standard belt.

Portable Saw Unit

The Cleveland Tractor Company has just announced a self-propelled mobile power saw unit which makes practical the use of power in felling and bucking trees. A unit that will operate three saws and can be kept in close proximity to the saw, regardless of the terrain; a unit which requires cable only long enough to keep the tractor unit out of danger when a tree falls in the wrong spot; a unit which will speed up the cutting and bucking operation, lower the cost and take the backache out of the lumber jack. Recent tests showed that it was possible to undercut a 28-inch Beech Tree with a 36-inch Saw within 2 minutes. The manufacturers stress as one of the most desirable features of this equipment the fact that the Tractor will supply power and portability to the generator while the draw-bar is available for skidding logs, hauling supplies and any other draw-bar operations.

Planting Plow

Two Forestry Tools have recently been developed by S. O. Heiberg, Associate Professor of Silviculture, New York State College of Forestry. One is a Forestry Plow especially designed for making parallel strips regularly spaced at the desired planting distance. The sod is removed by the plow to a width of 20 inches and placed in turned-over position on

each side of the cleared strip. In the same operation the plow mixes the soil in the strip to a depth of 8 or 9 inches. When necessary a sub soiler may break the sub soil to a depth of 12 inches. While still under experimentation, this Plow has worked very successfully to date.

Tree Marker

The other tool is a Tree Marker which has already been adopted by many foresters. It is especially adapted for marking trees in connection with thinnings, improvement cuttings, timber cruising, girdlings, marking of cutting areas, trails, survey lines, establishment of permanent corners, temporary and permanent sample plots. Foresters will find this tool exceedingly light, inasmuch as the major part is made of aluminum and the blade can be inverted so that it will never cut the pocket. The marker will make clearly visible marks on even rather rough bark trees. The blade can be easily resharpened with a stone and differently shaped blades for wide or narrow markings or for girdling can be had upon request.

New Knapsack Brush Burner

A new "Knapsack" Brush Burner, especially designed for Foresters has just been announced by the Aeroil Burner Company of West New York, N. J. This equipment can be used for backfiring to control forest fires, burning green brush and tops, and burning strips to aid in controlling fires.

Power Fire Line Maker

George R. Phillips, State Forester of Oklahoma, has successfully developed a new Power Fire Line Maker, said now to be the only one in existence. It consists of a specially designed plow mounted on the front of a 15 HP Cletrac Tractor. It is shod with a 16-inch metal buster blade and is equipped with a raising and lowering device which may be manipulated from the driver's seat. The plow can be successfully mounted on various makes of trucks, but at present a 1½ ton International is being used.

Soil Erosion Terracer

A new Terracer which should be able to prove its successful operation in Government Soil Erosion Work has just been developed at North Kansas City, Missouri. The Terracer is of the belt conveyor type operated by a single man from a tractor seat. An extra heavy 26-inch diameter plow disc plows up the soil and elevates it upon a rubber covered canvas belt which discharges at a distance of approximately 10½ feet at right angles to the furrow. Experiments with this terracing machine have shown that terraces can be built for less than \$13 per mile.

Further information concerning any of the above products will be supplied in your self addressed stamped envelope mailed to American Forests, 1711 K Street, N. W., Washington, D. C.

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Mrs. Jones: "When he shook the hall tree and began feeling around on the floor for apples."—Ollapod.

Relatively Speaking

A stout woman said to a little boy: "Can you tell me if I can go through this gate to the park?"

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Not Particular

Diner: "Do you serve crabs here?"

Waiter: "We serve anyone; sit down."—Stray Stories.

Works Both Ways

Nit: "What happens when the leaves fall?"

Wit: "The Fall leaves."—Boys' Life.

Tree Crops

Uncle Joe Cannon, long Speaker of the House and a critic of cigars and paw paws, used to tell how this delicious fruit could be adjudged ready for eating.

As long as the paw paw hung on the tree, he said, it was too green.

At the instant when it would drop from the tree of its own weight it was edible and perfect.

By the time it reached the ground, after falling of its own weight, it was rotten.

But if you were there to catch it half-way down as it fell, you would have a properly ripened paw paw.

Pennsylvania Fishing Improved by Civilian Conservation Corps

Fully 380 miles of streams will be improved and 788 fish dams will be constructed on waters in the Pennsylvania State Forests and on State Game Lands by emergency conservation workers during the fourth C.C.C. enrollment period terminating April, 1935, according to Lewis E. Staley, Secretary of the Department of Forests and Waters.

"Stream improvement," said Secretary Staley, "will be accomplished by introducing devices into the water which, by affecting the current, will provide cover and form pools for the fish in which they may find more abundant food supplies and greater security from their enemies. Stream improvement is designed to create satisfactory conditions for the greater growth of all aquatic life, including the organisms on which the fish feed."

Chestnut Blight in Michigan

The chestnut blight which has rapidly spread throughout the United States and is fast dooming the American chestnut tree commercially, has recently been discovered on the University Farm of the University of Michigan, at Ann Arbor.

The blight has been identified by Professor Dow V. Baxter, of the School of Forestry and Conservation. The trees on which the fungus blight was found were planted in the fall of 1906. According to Professor Baxter, the disease has previously been found in Michigan as early as 1916 but was destroyed.

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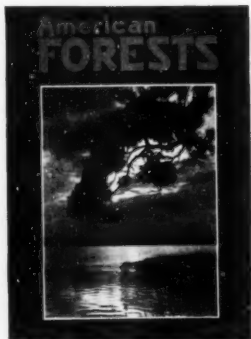
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FORESTRY IN CONGRESS

Transfer of Forest Service and Development of Prairie Shelterbelts Among
Controversial Issues Due for Airing

By G. H. COLLINGWOOD

Conservation in the new Congress, which convenes in Washington on January 3, will reflect the most diversified and widespread program of land reconstruction in the history of the nation. Projects of erosion control, reforestation, acquisition of forest land, retirement of submarginal farm lands, subsistence homesteading, continuation of the Civilian Conservation Corps, wildlife conservation, enlargement and improvement of state and national parks and development of private forestry under the Lumber Code are among the major conservation subjects likely to be aired before the session is completed. Supporting and expanding legislation for some of these activities will unquestionably be attempted; and it is certain that one or more of the Government's new ventures in conservation will be subjected to heated political attacks. All in all the session promises to be one replete in conservation interest.

In the forest field, a number of important subjects are due for consideration, notably the highly controversial shelterbelt project and the legislative program called for as a corollary of the conservation article of the Lumber Code. A question of more dramatic potentialities relates to the proposed transfer of the Forest Service from the Department of Agriculture to the Department of the Interior. This issue already is in the open. Precipitated by reports during the summer that the transfer would be made by Presidential proclamation, protests against the action have poured into the White House during the fall from all sections of the country. So widespread has been the expression of public opinion against the transfer that friends of forestry believe any attempt to effect the change by proclamation has been stopped, but they do not consider the fight won. Evidence is now clear, they declare, that those seeking the transfer will endeavor to accomplish it by the political route during the present session of Congress. If this proves correct, Congress has in store one of the worst conservation fights in history because the friends of forestry are well organized and prepared.

Another question that is expected to be much on the congressional spot is the shelterbelt project launched during the summer as a \$75,000,000 undertaking but later short-circuited by a decision of the Comptroller's withholding funds. Reduced to an initial appropriation of \$1,000,000, the shelterbelt work has moved in low speed, but it is understood that President Roosevelt expects to ask Congress for legislation necessary to make it one of the New Deal's major undertakings in land reconstruction. No excursion in conservation has ever generated so much controversial discussion, and legislation supporting the project is expected to have a stormy career in Congress.

Legislation already framed and designed to promote the practice of forestry on private timberlands in connection with the conservation article of the Lumber Code contemplates the setting up of a credit agency probably under the Reconstruction Finance Corporation to aid the industry in placing lumbering on a sustained yield basis and to assist the states in equalizing the tax burdens on private for-

est lands. The same legislative act will call upon Congress to authorize an enlarged program of tree planting on the National Forests, and an appropriation of \$10,000,000 a year for cooperation with the state and private timberland owners in combating the forest fire, insect and disease menace. Provision would further be made for expanded activities in forest extension in cooperation with the land grant colleges, a formalized program of forest acquisition along lines recommended by the Copeland Report, increased appropriations with which to speed up the Federal Government's survey of forest resources and provision of funds to enable the Forest Service adequately to cooperate with forest owners in developing improved forest practice on private lands.

Budget estimates for the regular work of the Forest Service as a whole and for various other conservation bureaus of the Government will not be available until the President submits his new budget to Congress. It is expected that the Randolph Bill, introduced late in the last session, will be brought up again. This bill would provide an authorization of \$73,000,000 for work on National Forests and a like amount for work on state owned forests and parks. Designed to cover emergency and relief work, it would provide employment for over 180,000 men for approximately six months on federally owned land and a like number on state lands.

In the legislative field of National Parks, the Carey bill in redrafted form is expected to be reintroduced. The bill provides for the enlargement of the Grand Teton National Park in Wyoming and the fact that the enlargement would bring within the park the commercial waters of the Jackson Lake Reservoir and necessary provision for rights-of-way for the transit of logs and livestock through the park invests the measure with a controversial aspect. Inclusion of commercial features in the Park, it is expected, will be opposed by a group of National Park friends who take the position that passage of the bill will set a precedent that during the years may be used to break down the noncommercial standards of the National Parks system.

No major legislation, it is understood, is being contemplated for the Bureau of Fisheries or the Biological Survey. The latter bureau, however, may ask for amendments to the Migratory Bird Conservation Act of February 18, 1929, to clarify the use of lands purchased for bird refuges.

Although there will be many changes in the personnel of Congressional Committees due to new members of Congress, James P. Buchanan, of Texas, will continue as Chairman of the House Appropriations Committee and John N. Sandlin, of Louisiana, as Chairman of the subcommittee on Agriculture, which passes upon funds for the Forest Service and the Biological Survey. Edward T. Taylor, of Colorado, is Chairman of the subcommittee which will pass upon appropriations for the National Park Service, the Erosion Control Service, the Indian Bureau, and the Division of Grazing Control of the Public Lands, all within the Department of the Interior.

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PUBLIC SUPPORT ORGANIZED FOR FOREST PEST CONTROL

Continuation of Federal cooperation and financial support in the battle to save the forests and shade trees of America from white pine blister rust, Dutch elm disease and gypsy moths was urged upon Lee Strong, Chief of the Bureau of Entomology and Plant Quarantine, by representatives of states, forestry associations and timberland owners at public hearings held by the Department of Agriculture in Washington on December 3, 4 and 5.

Without committing the Department of Agriculture to any definite plans, Mr. Strong gave those who attended the conference to understand that existing policies will not be materially changed. The delegates, on the other hand, left no room for doubt regarding the public demand for Federal cooperation, scientific leadership and financial support of existing programs. As further evidence of the public desire that the work of forest pest control proceed as vigorously as possible, representatives held two special meetings at the close of the regular hearings, formulated resolutions relative to continuation of the white pine blister rust program and organized a National Council to serve as an independent public agency to support adequate Federal and state action in dealing with the Dutch elm disease.

Dr. Arthur W. Gilbert, Massachusetts Commissioner of Agriculture, was elected Chairman and Harris A. Reynolds, of the Massachusetts Forest and Park Association, Secretary of the Council and they were instructed to secure responsible members in each state, who in turn would create State Committees. Among the functions of the Council will be responsibility for informing the public of the menace to America's elms, to help secure adequate Federal and state appropriations, and to assure continued Federal leadership.

Resolutions passed at the close of the first day urged that the work of blister rust control be continued by the Federal Government and that not less than \$375,000 be appropriated during the next fiscal year to sustain the educational, research and directional work of the Federal Government. This would be in addition to any emergency funds. Recognizing the help given by the Civilian Conserva-

tion Corps and other emergency relief agencies during the past year when over nineteen thousand men were employed on white pine blister rust control, the group urged the continuation of the Civilian Conservation Corps and the expansion of their program to permit C.C.C. funds to be used to protect white pine on all lands regardless of whether they are owned by the Government or by private individuals. Summing up the desires of individuals and representatives of forestry organizations, the group urged the continuation of studies of the disease as well as studies regarding more efficient methods of control and requested the Bureau of Entomology and Plant Quarantine to prepare and make public a ten-year program looking toward the adequate protection of all commercial areas of white pine.

The advisability of continuing large Federal expenditures for the control of gypsy moth and the maintenance of the barrier zone within the Hudson Valley from Long Island Sound to the Canadian border was questioned by Dr. F. C. Craighead and Dr. C. W. Collin of the Bureau of Entomology and Plant Quarantine, but the work now under way was vigorously supported by nearly all others present. According to Dr. Craighead and Dr. Collin the gypsy moth, which was first introduced into Massachusetts in 1869 and for whose control over \$40,000,000 has been expended by the states and the

Federal Government, has now become adjusted to environmental conditions. In the New England States it has become acclimated, having "predators and parasites and responding to environmental influences in a similar manner as do our endemic insects."

They pointed out that where favorite tree foods of the insect exist to the extent of more than forty per cent of the forest stand it may prove a dangerous factor. Otherwise it can be handled locally. In concluding their paper, the authors admitted that they "know very little of the effect of warmer climates on the activities of the gypsy moth. * * * It is unsafe to forecast what the behavior of the moth will be when introduced into more southern climates."

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His only stipulation in offering the prize is that the word or term must be euphonious and at the same time scientific.

Anyone is eligible to compete, regardless of training, profession, or membership in The American Forestry Association. The contest closes on March 31, 1935, and no entry will be considered bearing a later Post Office cancellation date. The winning word, or term, will be announced in the May issue of AMERICAN FORESTS.

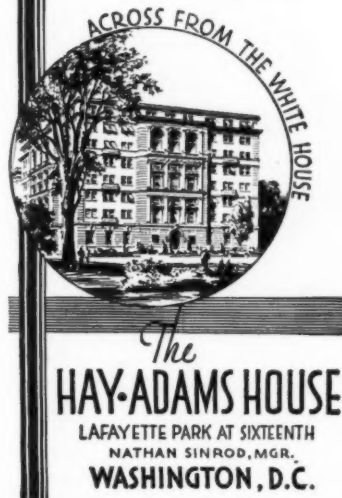
Each competing term must be printed on a plain envelope with the name and address of the person submitting it sealed within the envelope. Any number of words or terms may be submitted by a single contestant, but each one must be printed on a separate envelope with the name and address of the contestant sealed inside.

Address all entries "Forestry Term Contest," The American Forestry Association, 1713 K Street, N. W., Washington, D. C. No entries will be returned.

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Forest Conference Discusses Grazing Plans

Reductions in numbers of livestock grazing on the National Forests and adjustments in the distribution of grazing privileges were recommended by federal foresters from the ten National Forest regions of the United States and Alaska at the Forest Service conference recently held in Ogden, Utah.

While no radical changes in policy were contemplated, the conference reached the definite conclusion that on account of the continued drought, some reductions in numbers of livestock on the National Forest ranges must be made to safeguard the forest resources and to protect valuable watersheds. The adjustments in the distribution of grazing privileges were recommended to apply only in the most favorable agricultural sections. Such action, it was brought out, would insure that the National Forest ranges would contribute more fully under the changed economic conditions to the primary Forest Service objective that the National Forests shall make the greatest possible contribution to the maintenance of homes and sound communities consistent with the permanent maintenance of forest, forage and watershed resources.

While these adjustments and plans are being developed, it was pointed out, ten-year grazing permits will be discontinued, and only annual permits issued to the qualified users of forest range.

John Kerr Is Dead

John Kerr, who for thirty-four years served in connection with administration of the National Forests of Arizona and New Mexico, died on October 27 at the Santa Rosa Hospital, San Antonio, Texas. Born in Ireland on May 14, 1869, he was early associated with the livestock business in the southwest and was appointed a ranger when the Forest Reserves were with the General Land Office in 1901. Following the transfer of the National Forests to the Department of Agriculture and the creation of the Forest Service on February 1, 1905, he was advanced to Forest Supervisor in 1906 and on January 1, 1910, was appointed Assistant District Forester.

Plans Shaping for Game Conference

Plans for the 21st Annual Game Conference of the American Game Association, which will be held in New York City on January 21, 22, and 23, have been announced by Seth Gordon, Secretary of the Association.

Wildlife research and game breeding will feature the sessions the first day, while the second day will be devoted to the waterfowl situation and game management.

On January 23 the sessions will be devoted to a general fisheries management symposium led by the chairman of the American Fish Policy Committee and the American Fisheries Society, and to discussions on the soundness of the Federal Government's predator control work. This session will bring out the effect the new regulation concerning game and fish on the National Forests will have on the situation, and the need for setting aside wildlife refuges on Public Domain lands in advance of the establishment of grazing districts.

In addition to the regular conference sessions, a number of related groups will meet, such as the American Game Policy Committee, the American Fish Policy Committee, the National Committee on Wildlife Legislation, the Elk Commission, the United Game Breeders and Gamekeepers of America, and North American Game Breeders' Association.

Bashore to Replace Staley in Pennsylvania

Governor-elect George H. Earle, of Pennsylvania, announced on December 5 the selection of Ralph M. Bashore, of Pottsville, to be Secretary of the Department of Forests and Waters. He will take office on January 15 when the new administration assumes control of the state government, filling the position now held by Lewis M. Staley, a technical forester of long experience.

As Secretary of the Democratic State Committee of Pennsylvania, Mr. Bashore is one of the younger leaders of the Democratic party. He is forty years of age, a graduate of Dickinson College in 1921 and saw War Service abroad.

Fechner Urges Greater C. C. C.

President Roosevelt, on December 10, was urged by Robert Fechner, Director of Emergency Conservation Work, to increase the strength of the Civilian Conservation Corps if funds became available. The present capacity of the Corps is 350,000 young men, veterans and Indians.

The President is convinced, Mr. Fechner stated, that the C.C.C. has justified its existence, and that increase in its strength is "only a question of money." At the present time the Corps is spending at the rate of \$30,000,000 a month.

That the President regards the C.C.C. as among the most permanent of New Deal activities has been evidenced many times. Just recently he declared the C.C.C. "must go on." How much will be set aside in his budget for a continuance or expansion of the Corps, however, has not been divulged.

Just before his conference with the President, Mr. Fechner announced that more than 110,000 former members of the Corps have been able to obtain outside employment. The percentage of those getting work showed a marked increase during 1933, as compared with the winter of 1932, he said.

Everglades Park Boundaries Studied

The National Park Service, early in December, began a survey of the Florida Everglades to determine the boundaries of the proposed National Park area. Dr. Harold Bryant, Assistant Director, in charge of the Branch of Research and Education, is directing the survey, assisted by George M. Wright, Chief of the Wildlife Division, Oliver S. Taylor, Deputy Chief Engineer of the Eastern Division, and Roger W. Toll, Superintendent of Yellowstone National Park.

It was stated that the survey would be completed and the boundaries of the New National Park established before January 1.

Robert E. Miller Dies

Robert E. Miller, former Supervisor of the Teton National Forest and pioneer in the development of the National Forests of the West, died in Jackson, Wyoming, on November 21. Mr. Miller was born October 31, 1863, and was appointed Superintendent of the Yellowstone Park Timber Reserve when it was in the Department of the Interior in 1902. He continued as Administrative Officer of the forest after it was transferred to the Department of Agriculture on February 1, 1905, and its name changed to the Teton National Forest. He resigned July 15, 1918, to engage in commercial and banking business in Jackson. Thereafter, he maintained his interest and leadership of forest and park affairs and was influential in the creation of the Grand Teton National Park.

NEW YORK STATE TO CELEBRATE FIFTY YEARS OF FORESTRY

The fiftieth anniversary of the establishment of the State Forest Preserve and the beginning of conservation activities in New York State will be celebrated during 1935 culminating in a three-day meeting at Lake Placid early in September. There, in the heart of the Adirondacks Forest Preserve, an opportunity to demonstrate the results of fifty years of forest protection will be given. Invitations to participate have been sent by Commissioner Lithgow Osborne to a large number of forestry and conservation associations.

In accordance with an Act of the New York State Assembly appropriating \$5,000 for such a celebration, organization plans were initiated at a meeting called by Governor Herbert H. Lehman in Albany on December 12. Commissioner Osborne serving as Chairman of the Celebration Committee appointed Clyde D. Wagner of Syracuse as Publicity Director and created an Executive Committee to assist in carrying out a program of State-wide activities from early spring until autumn.

On May 15, 1885, the Act creating the forest preserve in fourteen Adirondack and Catskill Mountain counties was signed. This was the first comprehensive forest administrative act in America. It provided for a State system of fire protection, encouraged the practice of forestry on private lands, created a commission of three members, a state warden, state

inspectors and other necessary agents and included in the forest preserve all the lands then owned or thereafter acquired by the State within the designated counties. In the intervening years forest purchases have brought the total area in these two regions to 2,500,000 acres. The initial appropriation for the work of the Commission was \$15,000. Since 1902 the work has been administered by a single Forest, Fish and Game Commissioner appointed by the Governor.

The meeting recommended that a dinner commemorating the signing of the original Act be held in New York City on May 15 to which representatives of forestry, conservation and sportsmen's associations will be invited. It is also planned that sometime during the year a tablet will be unveiled somewhere within the original park boundaries to honor Wesley Barnes, former State Senator and now, at the age of ninety-four, the only living member of the original legislative committee which formulated the Act.

The appropriation of \$5,000 authorized by the State of New York will be administered by the Department of Conservation to stimulate a state-wide celebration during the spring and summer to be participated in by school children, civic groups and conservation organizations, and for the three-day meeting at Lake Placid.

THREE C'S IN HAWAII

Although Secretary Henry A. Wallace denies that the Territory of Hawaii is an integral part of the United States, 555 young Americans are carrying out the Civilian Conservation Corps program of the Department of Agriculture, in the four major islands of the Hawaiian group. The work is conducted in identically the same fashion as it is being done in the National Forests and Parks of continental United States.

Under the joint arrangement of federal and territorial officials, fences, trails and roads are being built; trees are planted; and the same standards of camp life are maintained as in other parts of the nation. Since the work first started early this year the C.C.C. boys in the territory have planted 563,657 trees on 1480 acres of land, have built over fifty miles of foot and truck trails, and have constructed ten miles of new fences.

While the work is the same as done in mainland United States, the forests themselves are different. There are no great stands of redwood, Douglas fir or yellow pine. But there are native trees of koa, kukui and ohia lehua, and such imported varieties as eucalyptus, silk oak, paper bark and iron-

wood. Hawaii forests are not valued for their commercial timber, but they are of prime importance for water conservation. Instead of tall, straight conifers, forest lands are dominated by spreading leafy trees and a jungle growth of grass and fern. A million acres of land constitutes the territory's forest reserves.

In the days of the Hawaiian monarchy there was considerable logging of sandalwood, and the tree almost became extinct. Under a conservation program it is slowly reappearing but sixty years are required for the tree to mature. Since the beginning of the territorial regime of the islands as a part of the United States, there has been little interest in lumbering except for a small amount of koa used in making furniture, and ohia used in flooring.

The moisture situation in the territory differs from that in any one locality in mainland United States because of its diversity in a relatively small area.

According to C. S. Judd, territorial forester, there is probably no other part of the United States where the relations between available waters and forest cover are more intimate and more delicate than in Hawaii.

NATION'S FOREST FIRE LOSS DECREASES

A total of 140,722 forest fires swept 43,889,820 acres in the United States during 1933, according to the Forest Service. This represents a decrease of about ten per cent in the average fire loss for the past five years.

Of the area burned, 40,166,900 acres was forest land without any form of organized protection against fires, and 3,722,920 acres was under some degree of protection. About twenty-one per cent of the unprotected forest land in the United States was burned over but the toll on protected land was approximately one per cent.

Property damage from forest fires for 1933 was placed at \$60,274,960, compared with a five-year average of \$62,831,423. This loss represents tangible values only and does not include watershed, recreational, scenic, soil,

young reproduction, or other values amounting to untold millions. The year saw a twelve per cent decrease in fire loss in the Southeastern States and a one and one-half per cent greater total in the Gulf States.

The South suffered heavily on unprotected lands, Florida leading the list with fire damage estimated at \$19,800,000. Georgia and Mississippi followed with five to seven million dollars each and North Carolina with three million. In a majority of the Southern states, however, the damage was less than in preceding years. On protected lands of the Northeastern and Middle Atlantic States, damage was practically cut in two. In the various national, state, cooperative and private systems, fire protection was given to 340,392,260 acres in 1933—an increase of 11,297,640 acres over 1932.

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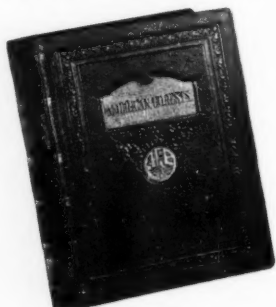
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PREDATORS AND THE NORTHERN BOB-WHITE

(Continued from page 10)

favorable types of "quail country," environments may be so weak that only a covey or two may be able to maintain a precarious existence on townships of land. A surplus exists if the population exceeds carrying capacity, however low that may be.

Quail populations can frequently be increased or made more secure merely through raising the carrying capacity of the land by improving the environment and by keeping the human toll within limits that the birds can endure.

H. L. Stoddard, in his Georgia quail investigation, and Aldo Leopold, in his north-central states game survey, both found that a bird to the acre was the highest level to which general quail populations rose in the best quail country, aside from very local concentrations. These "saturation point" populations of a bird to the acre should not necessarily be the goal of management. Lesser densities may be entirely satisfactory for ordinary purposes and are much more economically and securely maintained. Populations not exceeding a bird to two or three acres over wide areas may be more desirable biologically, as top-heavy numbers favor diseases and parasites.

If the intent of management is not to produce birds for shooting but to encourage the species solely for esthetic purposes, the surplus each season may be safely left to its natural fate. The carrying capacity of the land for quail may be raised but not indefinitely; sooner or later a limit in carrying capacity will be reached which will in turn be exceeded by the population. When this happens, enemies or other factors will again trim down the doomed surplus, as they always have.

If the purpose of northern bob-white management is to produce birds for sport, certain things should be clearly understood. The annual surplus, resulting from the season's hatch of young birds, becomes conspicuously exposed to predators about the time when the amount and quality of escape cover is decreased by the dropping of leaves from autumn vegetation. An increase of vulnerability comes with the first snows as well. For this reason, quail shooting should be done in the fall before the surplus has been dangerously exposed too long.

From this, too, the logical conclusion is that the simple and the intelligent way for quail shooters to compete with predators is to take the exposed surplus first. Partially to check up this point experimentally, the Iowa Fish and Game Commission permitted shooting on fourteen official quail management areas in the fall of 1933. Careful records were kept of birds bagged and lost, and censuses were made on most areas before and just after the shooting, and again at the end of the winter. Removal of the exposed surplus by the November experimental shooting materially lowered the predator loss rate for the wintering populations. Despite some census imperfections and the devastating effects of drouth and chinch bugs on the quail areas, the data show that: (1) populations on the shot areas, collectively, decreased during the winter at the rate of ten and three-tenths per cent, (2) unshot populations, comparable in location and period of observation and in

other ways to those shot, decreased at the rate of twenty-eight and three-tenths per cent.

These figures should not be construed as meaning that quail populations are benefited by shooting except possibly under conditions where the food supply is so very short that there is not enough for the birds even during open winters. The practical significance of the experimental results is that it is sound biologically for man to harvest by reasonable, early-season shooting that part of the population which would be lost anyway as a doomed surplus.

Starvation may virtually depopulate wide areas of bob-whites, especially on the northern fringe of the species range. Toward the very fringe of the range, as has been observed in central Wisconsin and central Minnesota, it appears that the inhospitality of the environment furnishes the equivalent of a continual state of emergency for the species. In the sub-marginal northern fringe environment, winter feeding by man is practically essential for any sort of satisfactory survival at all. Starvation emergencies in established quail range can be met by proper management measures. Where waste grain and edible weed seeds may be abundant and available, human attention to the food factor may not be a year to year management necessity. Feeding, though, may serve to insure populations against the emergency starvation losses which may follow heavy snows and are consequently not to be predicted much in advance.

An adequate food supply not only prevents birds from dying of hunger but provides sound stock with physical resistance to temperatures as low as thirty degrees below zero (F) or colder, and vigor enough to take care of themselves when attacked by enemies they would not be likely to escape if handicapped by weakness.

Fitness has been long accepted as the watchword of survival—fitness, both of organism and environment. Occasionally fit adult bob-whites may be caught by enemies through sheer unluckiness, but fit populations in a fit environment have demonstrated again and again their ability to look out for themselves. Heavy predation may signify that the birds are below the natural standard requisite for survival in the wild—starved, sick, injured, unadapted (as southern or other birds transplanted to the north from entirely different environment), immature birds from a late hatch, or some that are "just plain dumb." Or it may signify that the environment is incapable of accommodating the population it has.

In short, if we are entitled to make any generalization on the basis of the quail and predator data we have, it is this: heavy predation upon winter bob-white is a symptom rather than a cause of biological unbalance.

(For more detailed results of Mr. Errington's studies of the bob-white, the reader is referred to the following publications by him: "Vulnerability of Bob-White Populations to Predation," Ecology, April 1934; "The Wintering of the Wisconsin Bob-White," Transactions of the Wisconsin Academy of Sciences, Arts, and Letters, Vol. 28, April 1933, and the "Management of the Bob-White Quail," Extension Bulletin No. 186, Iowa State College.—Editor.)



WALLACE WOULD REGULATE FOREST INDUSTRIES

Secretary of Agriculture in Annual Report Asserts Timber Butchering Must Stop



HENRY A. WALLACE
Secretary of Agriculture

Declaring that public regulation of private forests is necessary, Secretary of Agriculture Henry A. Wallace in his annual report, released December 12, takes a definite stand on a controversial issue that has split the ranks of foresters, and to a lesser degree of lumbermen, for the past twenty years. The issue first precipitated a division in the ranks of foresters back in 1919, when Gifford Pinchot championed the so-called Capper Bill to regulate lumbering on private lands. He was supported by a sizeable group of foresters, but a majority of the profession believed cooperation rather than regulation offered the best solution. As a result the Clarke-McNary Act, based upon the cooperative principle, was passed in 1924, while the Capper Bill—a red flag to lumbermen generally—failed. Nevertheless, the issue has been a live one ever since and in recent months speculation as to how the New Deal Administration stands on the question of public regulation of forest industries has been rife.

Secretary Wallace's position is given in a section of his annual report wherein he discusses the social and economic aspects of forestry. "Social as well as economic considerations vest forestry with a public interest," he declares. But he does not elaborate on the extent or manner in which he would exercise public control of private forest properties. Along with public regulation of private forests, he asserts, should go an extension of public forest ownership, because throughout large areas the problem of forest care and improvement is such that only public agencies can deal with it effectively.

"This country's timber industry," the Secretary states, "began with enormous raw resources, with virgin stands of timber against which no one had any charges. It strove to get out the timber as quickly as possible, and never thought of restoring the growth. Founded and financed on this basis, the industry counted on a short mill life, and on quick liquidation of its investment. In all parts of the country we can see the results in sawdust piles and abandoned towns. Many forest communities that seem still to thrive are nearing the junk heap; they are taking out forest wealth much faster than it can be replaced. If they keep up their present rate of cutting, they will be finished within a few years. In an extensive western area that had twenty-five sawmills a quarter of a century ago, only four remain. There has been an enormous shrinkage in the timber crop. It is the same in the South. In one area typical of many, timber companies removed all the virgin timber, without leaving even seed trees. Fire caused more

destruction. Now the mills are gone, the county bonds are in default, and half the population is on relief.

"Against such practices it is difficult to make headway, though the forest industries themselves recognize the need of reform. As in other phases of our economic life, the principal obstacle is unregulated competition. Left to themselves, and forced meanwhile to engage in a ruthless struggle for business, the timber companies find it impossible to think of the future. The impulse to cut without providing for regrowth outweighs the public interest in conservation. Public regulation of timber holdings is necessary, and also a fundamental readjustment in the prevailing method of financing the forest industries. Together, these things will promote a sounder forest economy, and lead to permanent communities rather than to abandoned towns. Along with public regulation of private timber holdings should go an extension of public forest ownership; for throughout large areas the problem of forest care and improvement is such that only public agencies can deal with it effectively. Social as well as economic considerations vest forestry with a public interest. * * * * *

"Hitherto our forest resources have furnished employment mainly through exploitation—through wasteful cutting and through practices that made restocking difficult or impossible. There is a better way. Forests may still furnish materials for the lumber industry, the pulp and paper industry, and other forest industries. At the same time they may be conserved and improved as a source of future supplies by means which furnish employment now and furnish also the guaranty of increased employment in the future. It is possible to remove timber in large quantities and leave the land in a better condition to grow more timber."

According to the view of Secretary Wallace, "we solve only half the recovery problem when we stop producing surpluses. It is equally important to start producing something else. There must be positive as well as negative readjustments; new jobs must replace old. Undoubtedly our greatest single opportunity to accomplish this end lies in forest improvement and conservation, through which we may furnish non-competitive employment and permanent new sources of income. For much of our land forestry and agriculture are alternative uses. * * * * * Forest industries can be developed to support many more people than they do at present without the slightest risk of glutting the market. Indeed, an increase in the forest uses at the expense of agricultural uses of the land would tend strongly to improve the general economic balance."

The Department of Agriculture, through its Forest Service, the Secretary states, is giving greatly increased attention to the permanent up-building of the forests. In this undertaking he stresses three outstanding requirements: (1) the acquisition of forest land by public agencies; (2) the restoration of this land to profitable timber production through fire prevention, replanting, and judicious cutting; and (3) extension of adequate fire protection to a larger proportion of private lands with recognition of the fact that private owners should cease "butchering" the timber and should make provision for future crops as they cut.

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AMERICAN FORESTS Magazine

THE CHIMES OF LOST VALLEY

(Continued from page 25)

into the sunlight. But it gained him nothing, unless it was greater courage, for the bell had quieted and there was not a living soul or animal within his vision.

What did it all mean? He would like to lay it to his imagination, but that would be foolhardy. There was no mistake about the bell!—but why had it jingled at just that moment, and from above?

With real effort he turned to the yellow paper in his hand. Here was a solution, he hoped, to something—if not the bell. The first pages failed to give him a single sentence that he could understand, so blurred was the writing. But near the end, on a page that had been miraculously protected from the elements, he read:

"Another day gone, and I surely hope there will not be many more. Jim should be back soon. I cannot bear to tell him what has happened. When he learns of John Joe's death he will probably be willing to leave the others. This place which seemed so beautiful before is utterly unbearable now, and I wonder just why I have to live.

"Tim, wild thing that he is, comes every day and is growing rapidly. He sits outside in his awkward bird fashion and seems to ask where his playmate is. I cannot bear to go near him now, so I guess he will have to go through life the way John Joe fixed him. Perhaps—" There were a few faded words which the ranger was unable to make out—but no more. The diary ended there.

He moved slowly in the direction of the corral. He had not expected this—wished he had not discovered the box. There were some things not for curious eyes, some things that belonged to dust alone. It could still be. He could forget that which he had read and return the box to its place in the pine needles. There time would claim it—and its contents.

Suddenly he stumbled over a small mound, now a bed of wild flowers, and the box slipped from his hand. He reached for it greedily, but immediately drew back. A small board, rotted on one end, and almost covered with decayed grass and weeds, caught his eye. With difficulty he picked it up and saw carved on it, in rough letters, "John Joe, Age 8."

He set the board up in its rightful place, buried the box behind it, and glanced at the sun. It was growing late.

And then, far off at first, like a message from another world, came the soft deep tones of a horse bell. It completely unnerved him. To hear it now was more than he could stand. But on it came, slowly, almost like a dirge for the dead. And before he could reason, he pulled his gun and stood ready.

It seemed ages to the ranger as he waited. And just when he thought he would go mad, he saw coming toward him from around a bend in the canyon a huge golden eagle, lazily drifting through the air and downward in the direction of the little mound. The closer it came the more audible became the tones of the bell until finally, he was able to see that which appeared to be a miracle. Attached to the neck of the huge bird was a bell—a horse bell. He watched as it circled and wheeled away—until the notes of the chimes were lost.

The first purple of the evening was casting a warm light over the valley when he located his horse, browsing in the wild hay. But he was oblivious to it all. A legend was being rewritten for him—a story that only he and Lost Valley would share with Tim, the great golden eagle—the keeper of John Joe's chimes.

WHO'S WHO

Among the Authors in This Issue

F. A. SILCOX (*The Challenge of Forest Land*), Chief of the United States Forest Service, began his work in the Forest Service in 1905 as a ranger in Colorado. He rose rapidly in position until in 1911 he was appointed District Forester of the Northern Rocky Mountain Region, where he remained until 1917. Prior to his appointment as Chief Forester in October, 1934, Mr. Silcox was Director of Industrial Relations for the New York Employing Printers' Association.



F. A. Silcox

ROBERT MARSHALL (*Priorities in Forest Recreation*) is Director of Forestry in the Indian Service, at Washington, D. C. In this work he has charge of administration and conservation of nine million acres of forest land on fifty Indian reservations. Two of his outstanding books are "The People's Forests," dealing with deterioration of American forests and a practical plan for their rehabilitation; and "Arctic Village," an account of the mixed white and Eskimo civilization in northern Alaska.

PAUL L. ERRINGTON (*Predators and the Northern Bob-White*) is Assistant Professor in Charge of Wild Life Research at Iowa State College, Ames, Iowa. He places primary emphasis on field studies in carrying on the various phases of wildlife research.

GEORGE H. MAXWELL (*Turn the Floods Into Forests!*) is Executive Director of the National Reclamation Association, which he organized in 1899. Thereafter he gave his entire time to the management of a campaign for the inauguration of a national irrigation policy, which was accomplished by passage of the National Reclamation Act, approved June 17, 1902.



Geo. H. Maxwell

JOHN URBANEK (*Forest Corps*) lives in Utica, New York. He was formerly a member of Company 915, C.C.C., at Sequoia National Park, California.

MARY CARPENTER KELLEY (*The Anakim of New England Elms*) is a native of the White Mountain region of New Hampshire and a descendant of one of the old pioneering families. She is keenly interested in the early history of New England and in botany, particularly trees, orchids, and ferns. Mrs. Kelley lives in Alfred, Maine.

ALFRED G. CLAYTON (*The Chimes of Lost Valley*) is a United States Forest Ranger on the Washakie National Forest, in Wyoming.

JOHN PHELPS (*My Friend*) is a poet of New England; JOHN HARVEY FURBAY (*Field and Forest for Boys and Girls*) is Director of Nature Education at the College of Emporia, Kansas.

TODAY when the forests of the nation are being spot-lighted by the National Recovery program the figure of the forest ranger stands silently behind the scenes, the bulwark of all activities.

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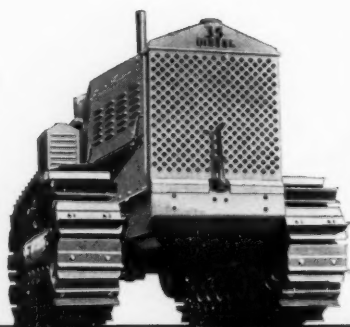


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